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TABLE OF CONTENTS—PAGE XXVII

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VOL. VIII NOVEMBER, 1925 No. 11

THE LOWERING OF MORTALITY IN TREATMENT OF TOXIC ADENOMA OF THE THYROID*

T. L. CHAPMAN, M.D.
Duluth, Minn.

There has emanated lately, from several fields where goiter is much studied, the opinion that some degree of toxicity and very certain degeneration of essential organs may arise from other than the two groups of goiter considered previously as the exclusive causes of toxicity. Graves' disease and toxic adenoma of the thyroid have clinically demonstrated their constant power to produce these changes, and adduced laboratory evidence of activity makes their origins certain. It is a question yet undecided whether other types can produce these effects, and proponents of the newer theories have still to prove the point. The most satisfactory classifications now in use give important place as a cause for toxicity and degeneration to the two types only that for so many years have been easily recognized as sources of such changes; long before laboratory methods had achieved their recent excellence, the relationship was recognized and methods for the elimination of offending glands and reduction of their activity were followed by improvement and cure. The toxicity arising from adenoma of the thyroid almost certainly originates, not in the whole of the gland, but in the tumor of the thyroid itself. Proof of this can be secured by the fact that, after removal of the growth, and without interference or treatment of the remainder of the gland, entire cures can be obtained.

The history of toxicity from adenoma shows that, in almost all cases, there has existed for many years the nodular type of goiter, without symptoms, except possibly locally from mechanical pressure, until there begins very slowly to be evidence of voluntary muscular incompetence, possibly some renal fault, increased blood pressure, and particularly a beginning or definite myocardial weakness. The degree and activity of this poisoning cannot be exactly estimated by any other method than that of the basal metabolic rate, so insidious is the onset and progress. Just what determines the occurrence and rapidity of this change from innocence to malignity is not definitely known, and even now the pathological laboratory does not answer the question to the satisfaction of all clinicians. In some instances the mere length of time the growth has been present seems to be a factor; possibly some local degenerative or irritative process may be responsible for increased production of the thyroid hormone in the adenoma, or increased absorption of this substance may be favored. Not all adenomas, even those present many years and of great size, ever become toxic, but competent authority would seem to indicate that, assuming the goiter of this type to have been observed at about thirty-five years of age, sixty per cent will proceed to toxicity by the sixtieth year.

Occupancy of some of the goiter regions of North America by a civilized population has produced several generations of people in whom colloid goiter is endemic and exceedingly common. The systematic prophylactic use of iodine is a comparatively recent practice. The generations in these regions that have reached middle age and farther have inherited thyroid glands that are replete with the presence and possibilities of adenoma of the thyroid, both fetal and acquired. The late history of thyroid surgery shows a very much greater number coming for surgical attention for toxicities arising from this source, so that it has become necessary to undertake surgery upon patients formerly not seen and even now not completely understood by all classes of their surgical attendants and consequently in very bad condition for operation because of advanced degeneration. Now that we understand the value of the estimates of these cases upon the basis of the basal metabolic readings, a great advantage is secured in that questionable cases will be brought to early operation. It is particularly to be emphasized that with all patients

*Read before the annual meeting of the Minnesota State Medical Association, Minneapolis, April, 1925.

who are known to have adenomatous goiter and who are in the possible age of toxicity, there can always be secured a time for operation, should it become necessary, that is safe in performance and sure in cure.

There can be no doubt of the wisdom of prophylactic removal of a definite adenoma of the thyroid at a reasonably early age, and another generation will have learned the wisdom of treating both prospective mothers and children so that adenoma will be largely prevented from occurring at all.

In present practice in this region, the greatest problems of thyroid surgery are largely found in the group that is now between forty and sixty-five years of age in which toxic symptoms and effects are already apparent.

Formerly and until very recent years, the most difficult and dangerous surgical situations were in the exophthalmic group and the mortality was highest here. Lately, however, the condition of the patients with toxic adenoma, their age and the changes induced by the disease in essential and important organs, have given surgically a higher mortality than that of Basedow's disease. This difference is partly caused by the recently vastly superior preoperative preparation of exophthalmic goiter cases over that of a few years ago. But, also, it is due to the more advanced age of the adenoma patient, the insidiousness of the disease and the advanced degeneration of important organs that has occurred before its source is recognized and treatment instituted.

The prognosis in cases of toxic adenoma will be influenced most largely by the success of the estimate that can be made of essential integrity of the heart, the kidneys and the blood vessels, together with proper preparation of the patient for operation. It is not necessary to set forth that cure depends upon a reduction of the excessive production and absorption of the thyroid hormone, and that, to this time, no methods of treatment are as effectual as surgery. The mortality from this method has, of course, been enhanced by the difficulty of diagnosis before the basal metabolic rate, as a differential diagnostic method, came into general use. Previously in many of these patients the true nature of the condition could not be determined, as the symptoms occurred in elderly folk who might be expected to show sufficient degenerative changes in important organs to account for the symptomatology.

The preparation for operation should include support of the heart muscle, by means of large doses of digitalis over a period of about three days, together with sufficient rest in bed. The kidneys, if incompetent, will be benefited by this procedure, as well as by the increased water intake that should be insisted upon except where edema from either heart or kidneys has occurred. To improve morale and guarantee a certain restfulness that is essential, small doses of morphine may be occasionally employed. The period immediately prior to operation must be free from anxiety, utilizing morphine and hyoscine when necessary. The operation should be done preferably with a local anesthetic, in cases of high toxicity and grave visceral degeneration, and should guarantee the minimum disturbance of the patient by pain, fear, or loss of undue amount of blood. Rapidity and precision of technic are important essentials; drainage of the occasionally very free discharge of serum and blood is generally required in cases where the growth is large. After-care must include quiet, rest, continuance for two or three days of digitalis, and adequate water intake.

A most interesting phase of the treatment of this type of disease is that some apparently hopeless cases with visceral degeneration recover after removal of the offending thyroid, to an amazing degree of competency of the affected organs, and this ability to recover from secondary degenerations seems to be in many cases greater than from comparable effects from almost any other cause. It is not uncommon to see patients with this disease who present themselves with gross evidences of cardiac incompetency (albuminuria, enlarged liver and bloated ankles), after a proper regimen of preparation, operation and after-care, once more resume their accustomed occupations, even well after middle life, for several years without any cardiac symptoms. The situation will sometimes be changed from one in which the patient would certainly die in six or eight months, or be a hopeless invalid a little longer than that, to one in which he can live many years, still happily and without especially narrowed limits of activity.

The high mortality rate, however, is due to the impossibly difficult and dangerous situation to which these patients have come unnecessarily. A consideration of this phase of the question must be made in patients with simple adenoma so that these tragic outcomes are prevented.

In conclusion we wish to say the following:

1. Prophylactic treatment of a large part of our entire population, by iodine, will to some degree prevent the occurrence of adenoma of the thyroid.
2. Removal of adenomas before the years of possible or probable toxicity should be a recommended practice.
3. Individuals already having nodular goiters should consult their physicians early upon the advent of any toxic symptoms, even slight ones, and these should be recognized.
4. Operative measures should be undertaken only with adequate preparation, and with local anesthetic in the severe types.
5. Even in many desperate cases of severe secondary degeneration, the removal of the offending source may be followed by rather remarkable restoration to effective life, without a lasting or severely hampering condition.

THE AMERICAN ACADEMY OF PROCTOLOGY

Physicians have received letters inviting them to become charter members of the American Academy of Proctology of Evansville, Ind. The fee is ten dollars. The letters are signed W. G. French, Secretary-Treasurer. William Gale French holds a diploma from the Hahnemann Medical College and Hospital of Chicago, dated 1906. Medical Directories indicate that Dr. French has changed addresses many times since he was graduated. In 1906 he was at Brook, Ind.; in 1909 at Greensburg, Ind.; in 1910, Indianapolis; in 1912, Kingsburg and La Porte, Ind.; from 1914 to 1916, inclusive, he was in Chicago. Other records show that French was in Detroit in 1912 and 1913; in Evansville, Ind., and Chicago in 1920; and back in Evansville in 1923. In 1907, William Gale French and three others incorporated the "Harvey Medical College and Hospital" of Chicago (not to be confused with the Harvey Medical College of Chicago). The William Gale French Harvey Medical College changed its name to Jackson University in 1908; to Jefferson University in 1909; in 1912 the charter was dissolved. This so-called medical college apparently never had any actual existence as a teaching institution. The name of French has repeatedly appeared in the newspapers because of his connection with questionable activities and enterprises. In 1921, French appears to have been connected with the "National Health Laboratories," which advertised an alleged cure for piles. In 1923, William Gale French announced that he was "going to run straight." One year later, an advertisement of the "National Health Laboratories" appeared and the indications are that French was interested in this.

(Jour. A. M. A., Sept. 12, 1925, p. 842.)

CLINICAL AND RADIOLOGICAL DIAGNOSIS OF RICKETS AND SOME CONDITIONS SIMULATING THIS DISEASE*

WALLACE H. COLE, M.D., F.A.C.S.
St. Paul

All hospitals which take care of crippled children receive as patients a certain number of cases of rickets in the various stages of the disease. Cases are also admitted where the referring physician has made a diagnosis of rickets but where subsequent examination shows that this condition is not present, but that some condition simulating rickets in its symptomatology is the lesion. The opposite is also true at times and cases of definite rickets are received where some other diagnosis has been made. The conditions which it is desired to bring to your attention and the differential diagnosis of which will be discussed, are: (1) rickets; (2) syphilis; (3) osteogenesis imperfecta, and (4) achondroplasia or chondrodystrophia fetalis.

The question of rickets is one which can be dismissed rather shortly, as everyone is familiar with the classical signs of that disease. As is well known, it is a constitutional disease which occurs in childhood and infancy, characterized by nutritional disturbances which result in a deficient deposit of lime salts in the bone. The most characteristic changes are in the epiphyseal cartilages, which become increased in thickness and much more vascular than normal. Irregularity, both microscopically and macroscopically, of the epiphyseal lines, is also typical, and the shaft of the bone adjacent to the involved epiphyseal line becomes thicker, due to periosteal involvement. As a result of the interference with the lime salts in the bones, softening occurs and, secondary to this, deformities of many types, due, probably, mainly to mechanical causes. When the acute stage of the disease has subsided the lime salts are redeposited so rapidly in the bones that they frequently become much denser than normal, and ivory-like in hardness. The clinical diagnosis of rickets can be made on many points, the most important of which are: enlargement of the epiphyses, especially at the wrist; the so-called rosary on the front of the chest; the large head; Harrison's groove

*Read before the Minnesota State Medical Society, Minneapolis, April 28, 1925. This paper was given largely as a lantern slide demonstration. Only a very few of the slides shown are reproduced.

across the thorax; and the deformities of the extremities, usually of the knock-knee or bow-legged type. Fractures may occur. The roentgenological picture is very typical, but varies somewhat according to the stage of the disease. In the acute stage, the epiphyseal area is cloudy and not sharply out-

Fig. 1

lined, and the center of ossification in the epiphysis itself is mottled and uneven. The epiphyseal lines have a tendency to spread out and the end of the metaphysis assumes a saucer-shaped appearance. This saucer-shaped appearance is more prominent in the lower end of the tibia and the lower end of the radius than in the other bones.

Syphilis of the bones and joints in children is always of a congenital type and gives a picture which is sometimes difficult of differentiation, but which is usually very typical. The disease manifests itself in many ways, the most common ones being an osteochondritis at the epiphyseal lines, a periostitis of a localized or diffuse type, and a formation of gummata. The condition is usually multiple. The osteochondritis, involving as it does the epiphyseal lines, simulates, to a certain extent, rickets and scurvy, but one always finds other signs of the syphilitic infection and the roentgenological examination is usually differential. Pain is always present with this type of lesion in the early stages, although later this disappears. Deformities of the affected bones sometimes develop due to irregular involvement of the epiphyseal lines. The thickening and increase in density of the shafts of the bones involved in a syphilitic periostitis is so typical as to need no description, but gummata may cause more or less destruction of bone and are not infrequently difficult to distinguish from a mild pyogenic osteomyelitis. Joint lesions, when present, are usually in the form of a synovitis, serous in character, and of an acute or chronic type.

The roentgenological picture varies with the stage of the disease. Usually there is a formation

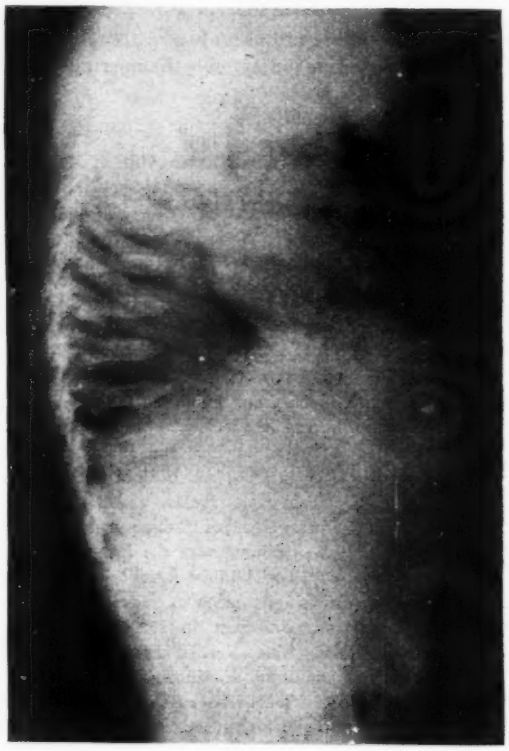

Fig. 2

of new bone of the periosteal type and a marked disturbance of the epiphyseal line, the changes being on the diaphyseal side. There is never any saucer-like expansion, as seen in rickets, and the

epiphysis itself is normal. The epiphyseal line may present an eaten-away appearance and circumscribed areas of softening and destruction are commonly present under the periosteum just back of the epiphyseal line. Atrophy of bone does not occur and fractures are therefore uncommon.

Osteogenesis imperfecta, a condition which is also described under various other names such as fragilitas ossium, osteopsathyrosis, and osteomalacia, the latter being probably incorrectly used in this connection, is of unknown origin and is characterized by a marked fragility of the bones, leading to repeated fractures. The most typical clinical fact leading toward a diagnosis is the history of repeated fractures, the result of slight or almost negative injuries. These fractures always heal, and callus formation may be small or large, but deformities sometimes occur as the result of malunion and bending of the callus at the site of fracture. The sclera are frequently very blue in these children. The roentgenological picture is fairly typical and shows a marked atrophy of the bone,

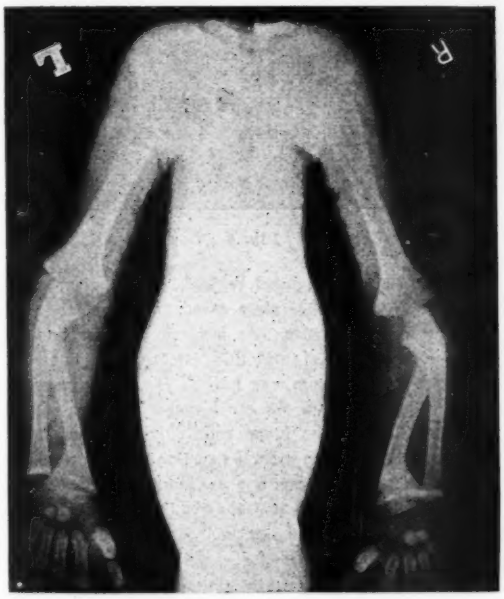

Fig. 3

the shadows sometimes being so light that they approximate that of the soft parts. There are no joint or epiphyseal changes and the multiple fractures can be seen.

Achondroplasia gives a clinical and roentgenological picture which in a typical case is difficult to confuse with other conditions. There are, however, a number of cases which must be classified as atypical achondroplasias and it is this latter group which is frequently confused with rickets. Achon-

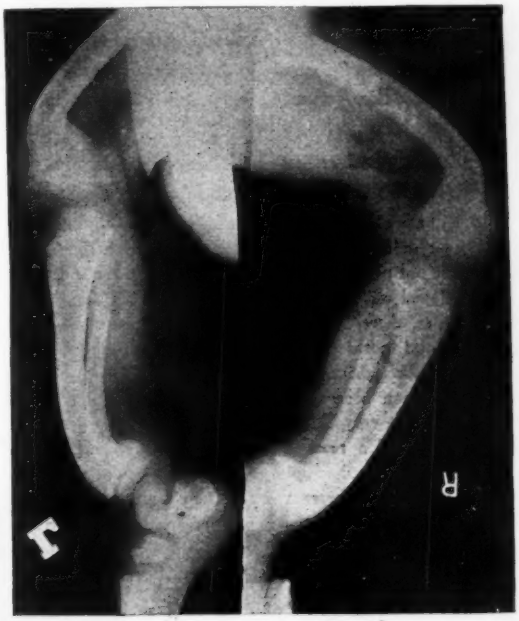

Fig. 4

droplasia is a congenital condition due to some unknown cause or causes, the most accepted theory being that the underlying factor is a tight amnion, although disturbances of the endocrine glands, infections and nutritional disturbances are sometimes blamed. The condition is usually noticeable at birth, but may not become evident until as growth occurs a disproportion between the length of the extremities and the trunk is seen. The early union of the epiphyses is typical. The main diagnostic features are the short extremities and long trunk, enlarged and sometimes distorted joints, depression of the nasal bridge, and the so-called trident hand, due to divergence of the metacarpals. Some of these may be absent, however, in the atypical cases.

The roentgenological picture shows what is probably a normal thickness of the bones of the extremities with a marked shortening, in the typical

cases, and various distortions of the epiphyses themselves (Fig. 1). Apparently periosteal bone formation is normal, but epiphyseal bone formation retarded, the epiphyses being greatly deformed and ossification markedly disturbed. All bones of both the upper and lower extremities may be involved and many areas of osteoporosis are seen. The bodies of the vertebræ may become wedge-shaped with a marked disproportion between the amount of bone present and the inter-vertebral cartilages, the latter being greatly increased in thickness (Fig. 2).

A few typical cases of the above conditions will illustrate the more important facts:

A. O., a girl two years old, had a negative history, except that deformities of both legs developed early in life, but were not present at birth. Examination showed a poorly developed child, with marked deformities of both lower extremities, there being very noticeable curvatures in both femora and corkscrew-like curves in both tibiæ. The epiphyses throughout the body were enlarged, there was a definite pigeon breast and a rosary was palpable. Clinically, this was very definitely a case of old, severe rachitic deformities. The roentgenograms showed bowing of the involved bones, and cupping at the epiphyseal lines. The shafts of the bone were thick and showed new periosteal bone formation. The spine was apparently negative. A definite diagnosis of rickets could be made on these pictures, the deformities of the bones and the saucer-like depressions at the epiphyseal lines being almost pathognomonic (Figs. 3 and 4).

Fig. 5

E. W., a six-year-old girl, was sent to the hospital by her physician with a diagnosis of tuberculosis of the left knee. The family history was negative and the past history showed nothing except a conjunctivitis when four years of age. Complaint on admission was knock-knee, bilateral, more marked on the left, of about four months' duration, with severe pain on walking. Examination showed the bilateral knock-knee, very slight on the right, an interstitial keratitis, teeth of the Hutchinsonian type and enlarged glands in the cervical and inguinal regions. The patient could not maintain her balance when asked to walk alone. The Wassermann was positive. As a result of these findings a clinical diagnosis of syphilitic osteochrondritis at the lower end of the femora was made. The roentgenograms showed the knock-knee deformities and a lesion of the epiphyseal lines at the lower ends of the femora, more marked on the left, with some destruction of the metaphysis proximal to them. There was an increase in density of the metaphysis around this destructive area (Fig. 5). Diagnosis: Syphilitic epiphysitis or osteochondritis.

Fig. 6

A. O., a girl three years of age, was sent in with a diagnosis of rickets. Her history showed repeated fractures of the right humerus, the first one having been sustained at the age of four months. There was a complaint also of bending of the right leg. Examination showed rather marked anterior bow of the right tibia, a deformity of the right humerus, some enlargement of the head, questionable epiphyseal enlargement and a rather marked blueness of the sclera. A diagnosis of osteogenesis imperfecta was

evident. Roentgenograms were difficult to take on account of the disposition of the child, but showed enough to confirm the diagnosis. The thin cortex of the bone, multiple fractures, and the bowing were typical (Fig. 6).

F. F., aged 1 year, was admitted on account of multiple fractures. The first fracture occurred when six weeks old and was of the left tibia. Since that time fractures of the

Fig. 7

right and the left humerus, of the ribs, of the femur and tibia had also occurred. The mother stated that even with the most careful handling fractures could not be prevented. Examination showed the typical blue sclera and bowing of both humeri, femora and tibiæ, with apparently a fairly recent fracture of the left femur. There could be no doubt about the diagnosis of osteogenesis imperfecta in this case, and the roentgenological picture, although difficult to take and not satisfactory, showed marked rarefaction, bowing, and fracture of the femur was unmistakable (Fig. 7).

L. K., ten years of age, was admitted to the hospital with a diagnosis of rickets. The history showed that there was a bowing of both tibiæ noticed early in life and that the child never had been able to walk normally. It was also noticed that the bones of the leg were thicker than normal and when the patient was about three years of age it was observed that the elbows could not be completely extended. The main complaint, aside from the deformities, was a rapid tiring on walking. Examination showed a rather marked bowing of both legs with a prominence of the upper end of the fibulæ and of the lateral condyles of the tibiæ. Both the arms and legs were shorter than normal, the buttocks were prominent, there was a valgus deformity of both feet, and the fingers were short and stubby and divergent. Roentgenological examination showed rather marked deformities of the epiphyses, especially of the elbows, wrists, knees and ankles. The upper ends of the femora were also deformed and the acetabula were irregular. The pubic bones were not united to the ischia. The anterior bowing of the tibia was apparently due to distortion of the epiphyses. A diagnosis of a somewhat atypical achondroplasia was made (Fig. 8).

A. J., a girl, thirteen years of age, came into the hospital without a diagnosis. The history showed that when one year of age the joints seemed to be larger than normal and that a maldevelopment of the bones had become more apparent as time had passed. The child had stayed small and the musculature had never properly developed. The examination showed a badly deformed child, the deformities involving practically the entire body. Feet and hands were large and there was a marked bulge of the sternal region, above an exaggerated Harrison's groove. The extremities were apparently shorter than they should be and the ends of all the long bones were enlarged.

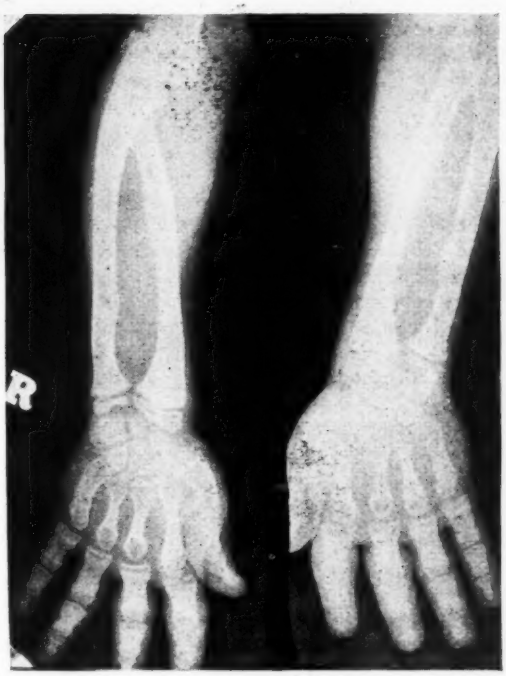

Fig. 8

Roentgenograms showed shortening and thickening of both humeri with distortion at the ends of the bones. The epiphyseal lines were indefinite. There was marked distortion of the lower ends of the radii and ulnæ, with small centers of ossification in the carpal bones and with some

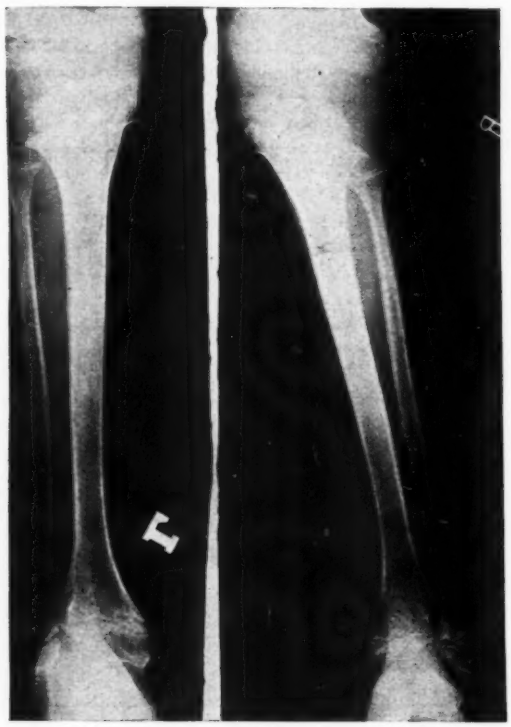

Fig. 9

of these centers not yet present. The metacarpals were short. The lower extremities showed similar pictures with an additional marked irregularity in bone formation in the feet (Figs. 9 and 10). The spine showed narrowed zones of ossification in the vertebræ with widened discs, and some wedge-shaped formation (Fig. 11). A diagnosis of atypical achondroplasia was made.

Fig. 10

Fig. 11

DISCUSSION

Dr. Charles A. Reed, Minneapolis: I fear we have rather hazy ideas regarding the differentiation of rickets, congenital lues, achondroplasia, osteogenesis imperfecta, scurvy and osteomalacia. Dr. Cole has cleared up this subject amazingly in his short but very comprehensive paper. In fact, he has left little to add and nothing to criticize.

In the classification of disease the pathologist and clinician must select typical cases showing classical symptoms. So long as our case is clean-cut and typical it is ordinarily easy to fit it into the scheme. Unfortunately, many cases are not typical. The picture may vary from the average, or more than one condition may be present. Rickets and congenital lues may co-exist. It may be difficult to say if the child has not scurvy as well as rickets. I think it well to focus our attention on the main *x*-ray changes so well brought out by Dr. Cole. A brief résumé may be of assistance.

In rickets, the epiphyseal line is thick and wide, and the end of the diaphysis saucer-shaped and irregular.

Lues does not change the thickness of the epiphyseal line, but the diaphyseal end is punched out at the edge.

Achondroplasia gives a thin epiphyseal line, with smooth,

sharp bone edges, while osteogenesis and the other conditions mentioned give no epiphyseal changes.

As to the shaft of the bone, in rickets it is atrophied early and dense and deformed later. In lues the periosteal enlargement is characteristic, while in achondroplasia the shaft is short, but otherwise normal. In scurvy, the shaft gives the characteristic change, a subperiosteal hematoma, which may calcify and simulate sarcoma. In osteogenesis, the atrophied bone is the diagnostic point.

There is one clinical symptom of rickets which is so often misinterpreted that I cannot refrain from mentioning it. The epiphyses of acute rickets are tender and the child refuses to bear weight on this account. Many mothers think their child is paralyzed and the term "pseudo-paralysis" is applied to this condition. The soreness disappears as soon as the acute stage is passed.

I hope that Dr. Cole will have his interesting pictures published in full, as we will all desire a permanent record of them.

THE AMERICAN ASSOCIATION FOR MEDICO-PHYSICAL RESEARCH

This is another society catering to the twilight zone of professionalism. It recently held what is claimed to be its fourteenth annual convention. Little appears to have been heard of this organization until three years ago, when the Albert Abrams fakery was at its zenith. In the meeting held that year, no small time was devoted to the "Electronic Reactions of Abrahams." The Medical Association for Medico-Physical Research was organized in 1911 by the outstanding quack of the century—Albert Abrams. It was originally known as the American Association for Spondylotherapy. From a study of the records of some of those whose names appear on the program of the society's annual meeting about to be held, it should not be difficult to judge the probable scientific status of the American Association for Medico-Physical Research.

(Jour. A. M. A., Sept. 19, 1925, p. 919.)

ROBES' ANTI-RHEUMATIC INJECTIONS

While the advertising for Robes' Anti-Rheumatic Injections, which is sent out by Robes Intravenous Products, Inc., leads one to believe that the product is some form of streptococcus vaccine, an advertisement containing a report of the analysis of the product indicates that the preparation consists of nothing more than minute amounts of mercuric chlorid and traces of guaiacum in a physiologic solution of sodium chlorid containing about seven per cent of alcohol. Neither mercuric chlorid nor guaiacum is recognized as having antirheumatic properties. The preparation has not been accepted for New and Non-official Remedies.

(Jour. A. M. A., Sept. 12, 1925, p. 845.)

TETANUS ANTITOXIN

To secure protection in severe cases of injury it is usually advised to give a second injection of antitoxin ten days after the primary one.

(Jour. A. M. A., Sept. 26, 1925, p. 923.)

SOME ERRORS IN CARDIAC DIAGNOSIS*

MORRIS H. NATHANSON, M.D.
Minneapolis, Minnesota

The diagnosis of diseases of the heart is often attended with difficulty. Mistakes are commonly made, first, in diagnosing heart disease, where there is no true cardiac pathology, and second, in diagnosing a normal heart in cases where later developments show pathology is present. These difficulties arise from the fact that practically all the symptoms and signs ordinarily considered as evidences of a diseased heart may occur in individuals possessing the organ anatomically intact in all its structures. Thus, a large proportion, possibly 50 per cent, of individuals presenting symptoms such as respiratory distress, palpitation, and precordial pain, and also physical signs, especially murmurs and irregularities, prove to be non-cardiacs on careful study. A large number of these cases have at some time been diagnosed as cardiopaths. It is true that with added experience, one can often, by a more thorough analysis of these signs and symptoms, discover certain features which differentiate the cardiac from the non-cardiac. There is furthermore a fairly large group lacking the usual signs in their history and physical examination in whom definite pathology is present. We may often obtain great aid in diagnosis by the use of additional methods, such as the electrocardiograph and *x*-ray.

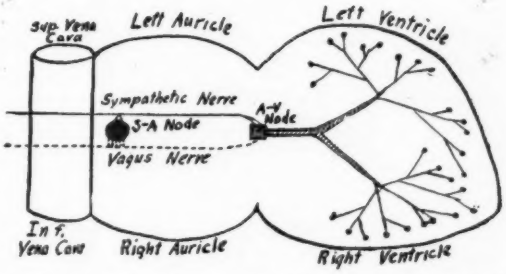

Fig. 1. Schematic representation of the specialized tissue in the heart, showing the distribution of the conducting system and nerve supply.

I wish to present a small group of cases illustrating the value of these methods. This group consists of cases in which errors of two types might easily occur: (1) a group in which cardiac pathology might be suspected because of abnormal

*Read before the Soo Surgical Society, December 10, 1923.

physical signs, chiefly irregularities; (2) a smaller group, in whom the absence of certain physical signs might tend to exclude cardiac disease, though it is actually present.

In the first group are a few, selected from a rather large number of cases that present themselves with a variety of symptoms and a disturbance in rate or rhythm of the heart. The symptoms

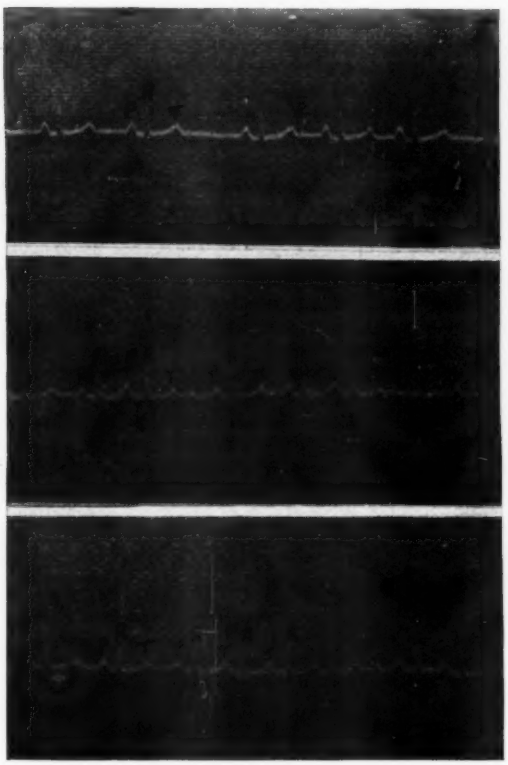

Fig. 2. Three electrocardiograms taken within five days. Upper shows marked sinus arrhythmia; middle shows frequent auricular extrasystoles; and lower, paroxysms of auricular tachycardia.

are commonly: (1) consciousness of the heart-beat (rapid or irregular); (2) precordial distress of various types; (3) dizziness; (4) fainting spells, and (5) respiratory distress. The irregularity of the heart may not be constant, being absent at times, and may vary from time to time. Its exact nature may be revealed only by the use of the electrocardiograph. These individuals often have had their attention called to their heart, and many have the impression that a serious affection of the heart is present. Further observation reveals the fact that the arrhythmia and symptoms may disappear from time to time or may vary in nature. Furthermore, and this is of importance, these conditions are not later followed by any manifestations of heart failure. Our clinical impression then would be, that these disturbances are not due to organic disease of the heart. We need not rely entirely, however, on our clinical evidence that this type

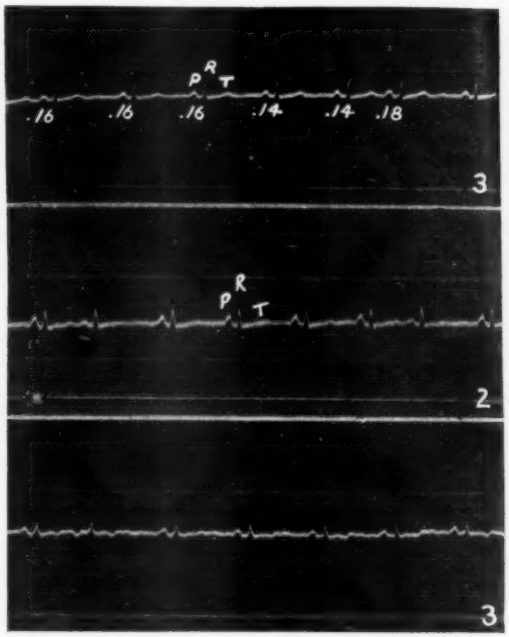

Fig. 3. From a case with an irregular pulse and symptoms of palpitation and dizziness. Note the irregularity associated with variation in contour of the P wave and varying P-R interval.

of case, in spite of marked cardiac irregularities, is not associated with organic cardiac disease. A study of the mechanism of the heart-beat, as it is now understood, demonstrates the fact that irregularities of any type may arise without organic change in the heart itself. A knowledge of this mechanism is of importance in the understanding of these cases, and it would be worth while reviewing briefly our progress in the study of the exact nature of the heart contraction.

For a considerable length of time all that was known concerning the function of the heart was its contractility. It could easily be seen that the fibres shortened when the heart was stimulated. The mechanism by which these contractions oc-

curred at a certain rate and with a certain rhythm, and by which the sequence of events in the cardiac cycle took place in an orderly, systematic manner was not known at this time. In more recent years it has been found that the heart muscle possesses properties other than contractility. It was found that it could not only contract to external stimuli, but could initiate impulses, which resulted in spontaneous contraction. Furthermore, it was found that these impulses arise at a definite point and spread through the heart in a definite manner, activating the entire heart muscle. It was thus, as a result of a rather long series of researches, that we have arrived at our present-day understanding of the mechanism by which the impulse, exciting the heart contraction, arises and by which it spreads throughout the heart. It is through the activity of this system that the heart owes its orderly rythmic contraction, and it is through disturbances in this mechanism that disorders of the heart-beat arise.

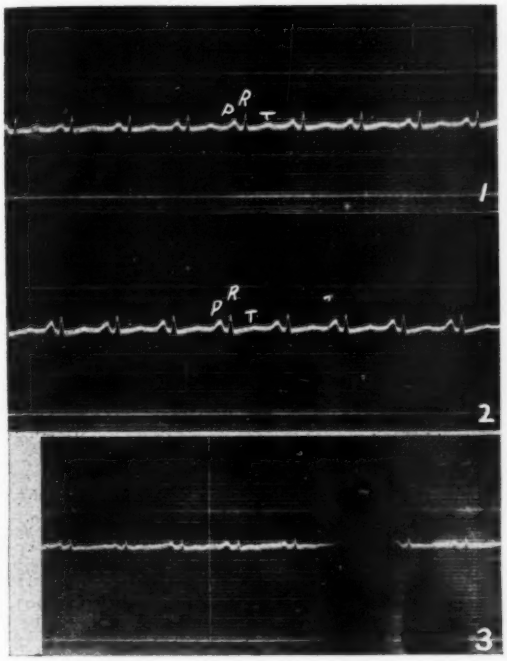

Fig. 4. Same case after atropine sulphate gr. 1/50. Regular rhythm and uniform P and P-R intervals.

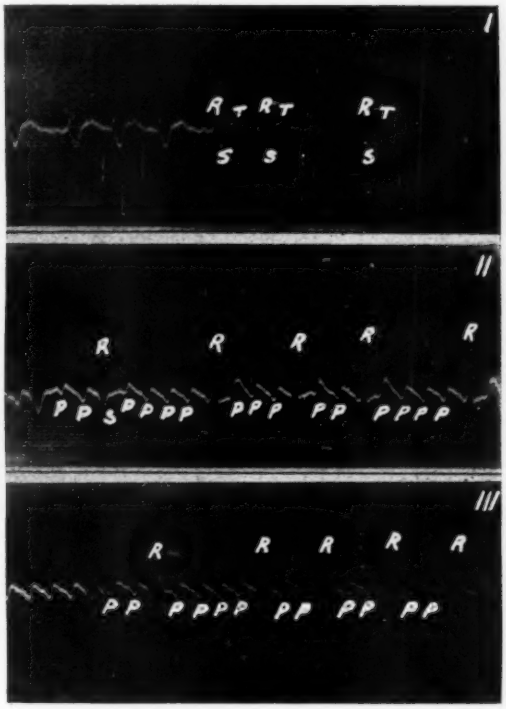

Fig. 5. From a case of auricular flutter. The auricular oscillations are abnormal, and are two to four times as frequent as the ventricular.

Figure 1 is a schematic representation of these specialized tissues which initiate and conduct the excitation wave which precedes the heart contraction. The first portion of the heart to become active, that is, the point at which the impulses arise, is called the sinus node (S-A node). This bit of tissue, the pacemaker of the heart, lies at the junction of the superior vena cava and the right auricle. The excitation wave proceeds from this point through the auricle. The connection between the auricle and ventricle consists of a node of specialized tissue (A-V node) and an extension of this node into the ventricle, called the bundle of His. This bundle passes on the right side of the interventricular septum, gives off a left branch, which pierces the septum, and is distributed to the left chamber. These two main trunks break up into fine ramifications, which form an interlacing network just beneath the endocardium, and is distributed to the muscle fibres. An orderly rhythmic cardiac contraction depends on a normal function of this system, and disturbance of rhythm must always be studied in relation to disorders of this mechanism. It is obvious that changes in the heart muscle may involve portions of this specialized tissue, and thus produce arrhythmias. However,

and this is of great importance in the understanding of irregularities, disorders of this mechanism may arise entirely from extra-cardiac sources. As will be seen in the diagram, fibres from both the vagus and sympathetic nerves are distributed to these tissues. Impulses passing down through these nerves have a profound effect on the activity of the conducting system. In a general way, vagus stimulation depresses the properties of excitation and conduction in these tissues, while the sympathetic has an opposite action. These two antagonistic nerves are in tonic activity, that is, impulses are continually passing down them to the heart, maintaining a normal function of the conducting system. When there is a disbalance in this antagonism there is a resultant disturbance in the activity of the conducting system, and disorders in rate and rhythm arise. This is not a new conception, for it is generally now known that any portion of the viscera, though anatomically intact, may function abnormally as a result of disturbances in enervation. Thus, the pupil, the bronchi, salivary glands, stomach or intestine, may give sensations as a result of disfunction due entirely to faulty enervation.

In the case of the heart we have an accurate, graphic method for studying such changes. Various investigations, both clinical and experimental, have shown that the electrocardiogram, which graphically represents the activity of the conducting system, may be markedly altered by nerve stimulation or depression, and may result in as marked changes as occur in true disease of the heart. We are justified, then, in concluding the following: (1) cardiac irregularities result from disturbances in the functioning of the conducting system; (2) dysfunction of the conducting system

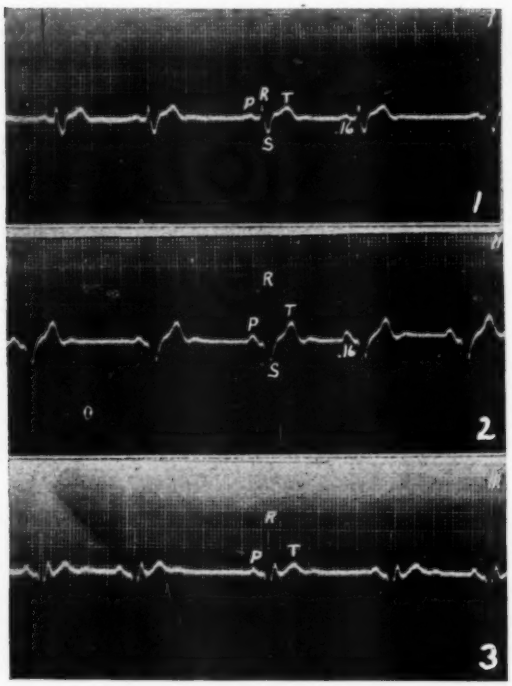

Fig. 6. Restoration of normal rhythm. Marked sinus arrhythmia present.

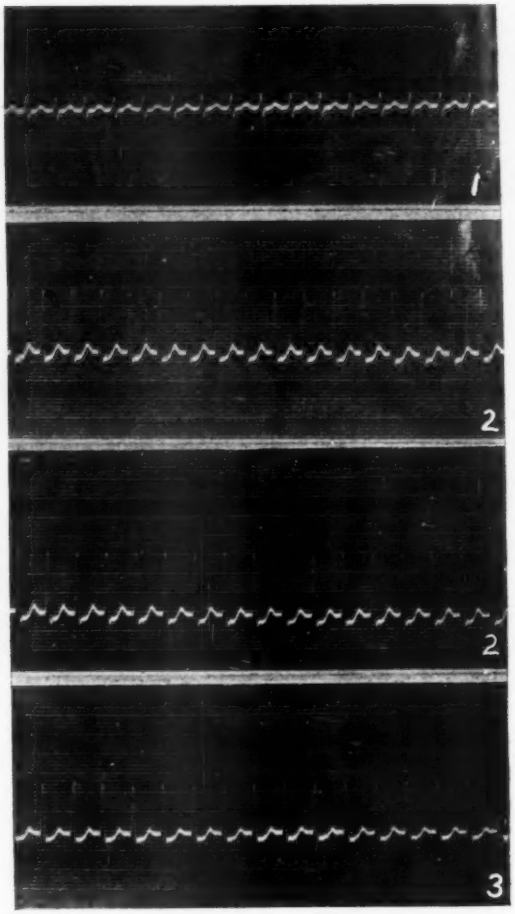

Fig. 7. From a case of paroxysmal rapid heart action. The rate is 200 and the impulses arise away from the sinus node, probably in the A-V node.

may result entirely from faulty enervation; (3) cardiac irregularities may then be indicative of abnormal enervation only, and not of organic change in the heart.

I will mention briefly here a few cases showing various types of arrhythmias associated with symptoms, which can be explained entirely on the basis of abnormal nerve control to the conducting tissue.

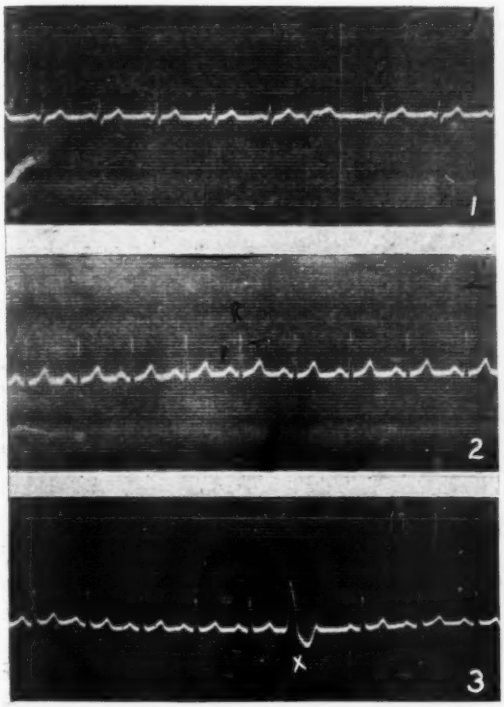

Fig. 8. Electrocardiogram two hours later. Normal rhythm established, rate 100, occasional ventricular extrasystole.

Case 1. A young woman, aged 24, two months pregnant. She has been told that a heart condition exists, and wishes to know whether the completion of pregnancy will be a serious undertaking. Past history shows a period of rapid heart action two years ago, following a severe emotional upset. Since that time she has had spells of dizziness, fainting, and consciousness of the heart-beat. General examination is negative, except for asthenic type and a cardiac irregularity, which varied from time to time. Figure 2 shows three electrocardiograms. In the first there is a marked sinus irregularity, a definite vagus effect. The record five days later shows frequent extrasystoles, arising in the auricle. The third shows paroxysms of rapid heart action, rate of 150, interrupting the normal rhythm. These contractions arise in the auricle outside of the node, and can be explained by depression of the node through increased vagus tone. At the time this tracing was being taken the symptoms of palpitation and dizziness were very marked. This irregularity could easily be explained on the basis of disturbance of enervation. The patient was told that her symptoms were not due to a diseased heart. She completed her pregnancy without any difficulty.

Case 2. A young woman with similar symptoms and a cardiac condition suspected. Her pulse at times seemed totally irregular, and auricular fibrillation might have been considered. The electrocardiogram (Figure 3) shows an

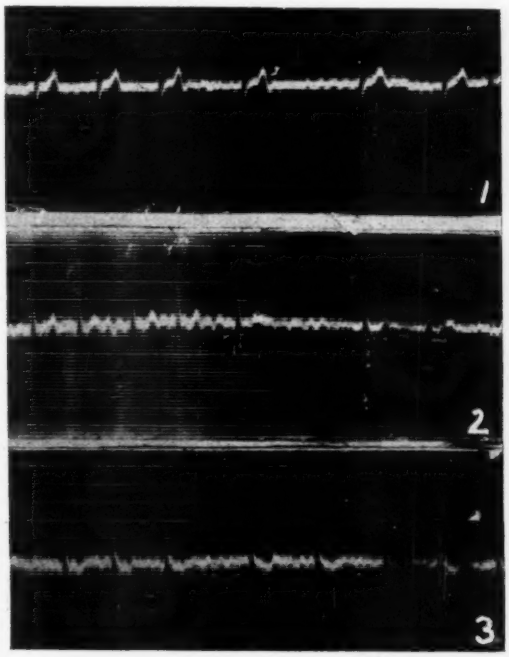

Fig. 9. Total irregularity due to auricular fibrillation in a heart otherwise normal. P wave is absent and is replaced by fine irregular oscillations, produced by the fibrillating auricle.

auricular wave (P) which varies in contour markedly, and there is a varying P–R interval. This suggests an unstable or shifting cardiac pace-maker. The impulses do not all arise from one site and therefore the irregularity. It has been demonstrated that such a condition may arise from alteration in vagus tone. The vagus effect is well shown in this case. Figure 4 shows the change after a hypodermic injection of atropin sulphate, gr. 1/50. The rate is somewhat increased, the rhythm is now absolutely regular, and the P waves are uniform in appearance. This indicates that the sinus node (vagus effect now broken by atropin) has complete control over the initiation of the cardiac impulse. This therapeutic test shows that this is a purely neurogenic irregularity.

Case 3. A middle-aged man of fifty-four complaining of dizziness and shortness of breath. Before coming under observation a rapid irregular heart had been found, and he

was confined to bed at absolute rest for six weeks. He improved somewhat, but his heart was still irregular. He was seen at this time and the electrocardiogram showed an auricular flutter, with a rapid, irregular ventricular rate. This condition is often associated with organic pathology, but may be purely a neurogenic disturbance. Fortunately, auricular flutter may usually be transformed to the normal

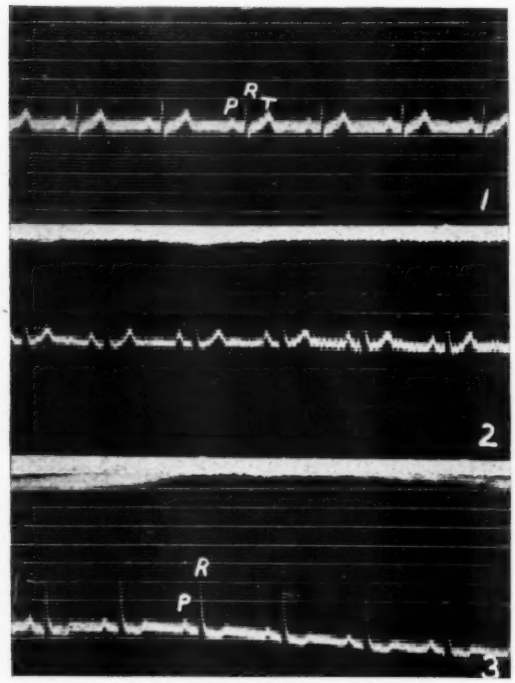

Fig. 10. Normal rhythm established after quinine sulphate, gr. xx.

mechanism by the proper administration of digitalis. Tincture digitalis was administered in rather large doses for two days. A number of records were taken. Figure 5 shows the presence of a flutter. Figure 6, after its cessation, shows a marked sinus arrhythmia. The patient was able to be up and about, shortly after the onset of the normal rhythm.

Case 4. A man of middle age with a history of attacks of rapid heart action for the last twenty-five years. These seemed to be associated with a gastro-intestinal disturbance. At times he has a sensation of fullness in the lower abdomen, and then the rapid heart action may begin. A paroxysm may last as long as several hours. He is considerably distressed during this time by palpitation, dyspnea, and dizziness. Figure 7 shows the nature of the rapid heart action. The rate is about 200, the P wave does not precede the R, the impulses arising away from the normal site, probably in the A-V node. This condition is also usually extracardiac in origin, and is often relieved by vagus pressure. Figure 8 is a tracing taken two hours later, showing a rate of a hundred and a normal mechanism except for an occasional extrasystole.

Case 5. A young man of twenty-five. No previous cardiac history. Suddenly, during a severe exertion, he became dizzy and faint, and was conscious of a distress and pounding in his chest. He was seen two days later and nothing found physically, except a totally irregular pulse of normal rate. He had been advised to discontinue his work for a time and that a disease of the heart was present. Figure 9 is the electrocardiogram at this time and shows the presence of an auricular fibrillation. It is true that this irregularity is usually associated with cardiac pathology, but no other evidence existed in this case, and a diagnosis of a neurogenic heart was made. This irregularity was present for three weeks. He continued his work, suffering merely from some mental depression and precordial distress. At this time twenty grains of quinine sulphate was administered in five-grain doses. After the fourth dose, the patient was relieved of his precordial distress and found that his pulse was regular. Figure 10 is an electrocardiogram taken, showing the restoration of the normal mechanism. He

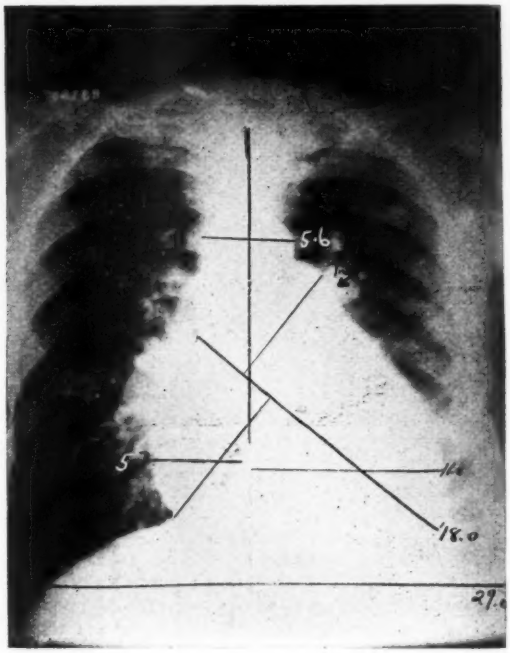

Fig. 11. Roentgenogram at six feet of heart from a case of mitral stenosis. The dilatation to the right and distention of the conus pulmonalis (arrow) are features of mitral lesions.

has been observed for two years, and has shown no evidence of any organic cardiac pathology. He constantly shows a marked sinus arrhythmia and an occasional extrasystole.

These cases are not at all unusual and are very often diagnosed as myocarditis. It is to be empha-

sized again that there is sufficient evidence, both clinical and physiological, that any type of cardiac irregularity may be present in a heart anatomically normal. A diagnosis of myocarditis cannot be based on the presence of an irregularity alone, for with our present understanding of the mechanism of the heart-beat, and the effect of the cardiac nerves, any irregularity may be explained on the basis of a disturbance in enervation.

Another physical finding which is commonly misinterpreted and which results in diagnostic errors, is the presence of murmurs. With the introduction of the stethoscope and the development of auscultation, great emphasis was laid on the presence of extraneous sounds in the heart. They were found to occur in association with cardiac disease, and this led to the erroneous conclusion that murmurs

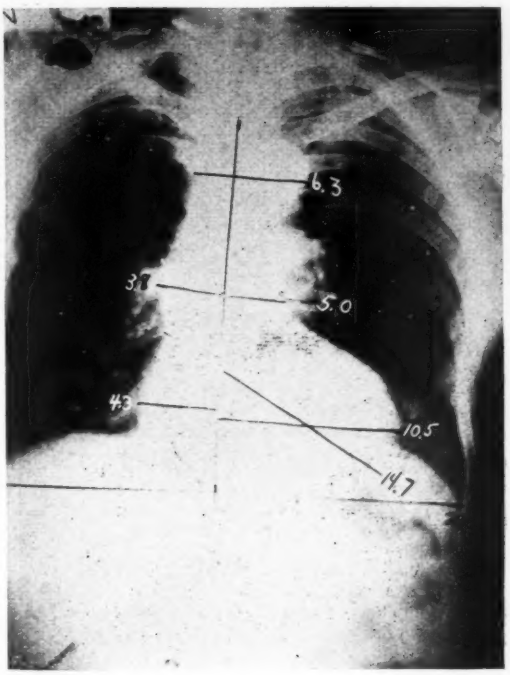

Fig. 12. Dilatation chiefly of left ventricle. Note the boot-shaped configuration of the heart. Aortic dilatation also present.

were always evidence of cardiac pathology. There have been many observations to show that certain murmurs, at least, occur in individuals who never show any evidence of heart disease. Various studies on large numbers of normal individuals, as in college or army examinations, have shown that, under certain conditions, murmurs may be found in as high as 50 per cent of those examined. It is true that some murmurs, especially diastolic, usually mean some true defect in the heart. In spite of all these observations, diagnoses of heart disease are still made merely on the presence of a systolic

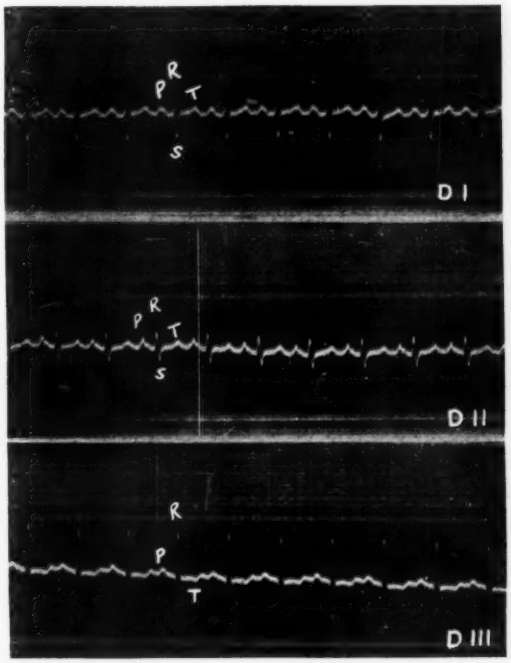

Fig. 13. Electrocardiogram from a case of mitral stenosis. The downward initial ventricular deflection (S) in Lead 1, and upward deflection (R) in Lead 3, are characteristic of right ventricular preponderance.

murmur. A murmur associated with definite evidence of cardiac enlargement is, of course, significant. The presence of an enlarged heart cannot always be determined by physical examination alone. Here the roentgenogram and the electrocardiogram are of great value. Figures 11 and 12 are illustrations of cardiac enlargements, the first being chiefly that of the right ventricle; and the second, a left ventricular type. Electrocardiograms also usually give evidence of enlargement of one or the other chamber of the heart. Figure 13 is the tracing of a case of mitral stenosis, showing a definite right preponderance, and Figure 14 shows a left preponderance associated with arterial hypertension. These additional methods are often necessary to evaluate the importance of a murmur. If neither

shows any abnormality, great doubt is thrown on the significance of this physical finding.

It is not only true that a diagnosis of heart disease cannot be made on the presence of a murmur alone, but it is also true that the absence of a murmur does not exclude cardiac pathology. This is especially the case in the non-valvular types of heart disease, usually associated with hypertension. A study of a series of these cases in the stage of advanced heart failure revealed the interesting fact that almost 50 per cent have no murmurs, or at least they have no constant murmurs. It is obvious, then, that if one relied on the presence of murmurs alone, true cardiac disease would often be overlooked. In these cases the electrocardiogram often shows indications of myocardial change. These electrocardiographic signs result from an alteration in the path of conduction through the ventricle, brought about by the pathological changes in the muscle. This produces changes in the ventricular portion of the electrocardiogram, Q R S and T. These consist of a widening and notching of the Q R S and a flattening or inversion of the T. Figure 15 shows the notching and widening of the Q R S, which are considered as evidences of block in the ventricle. In microscopic sections of hearts showing these abnormalities, there is frequently found a diffuse fibrosis in the ventricular muscle. This type of electrocardiogram is not a great rarity and it must be emphasized that it occurs often in hearts with regular rhythm and in the absence of murmurs. Figure 16 shows an electrocardiogram of a case of hypertension. There is a left ventricular preponderance and also inversion of the T in Lead 1. The left preponderance is quite a constant finding in hypertension and results from hypertrophy of the left ventricle. The inversion of the T, however, seems to occur only in the later stages and usually when the heart has begun to show signs of exhaustion. A study of this abnormality by Willius seems to indicate that it is of serious prognostic significance. Figure 17 shows an electrocardiogram from a case of angina pectoris. There is a deep inversion of the T wave in

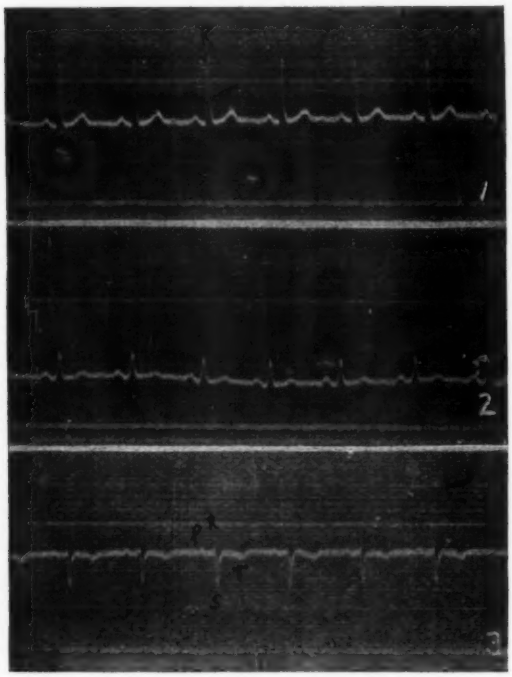

Fig. 14. Electrocardiogram from a case of hypertension. Left ventricular preponderance characterized by upward deflection (R) in Lead 1 and downward deflection (S) in Lead 3.

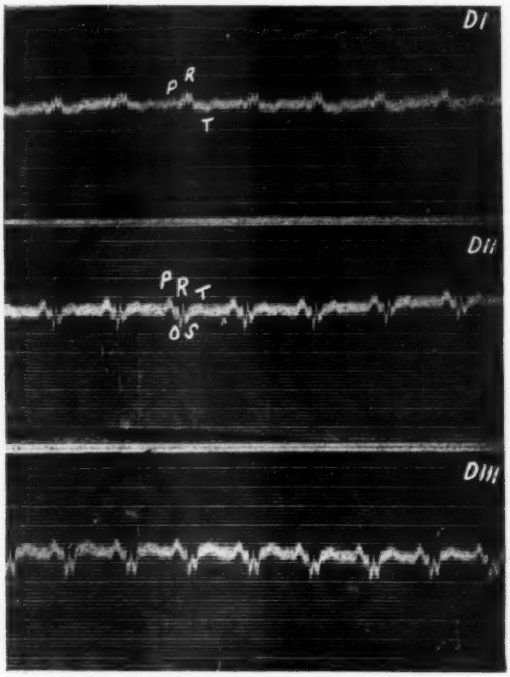

Fig. 15. Electrocardiogram associated with intraventricular block. The involvement is considered to be in the finer arborizations of the conducting system. The chief features are the low amplitude of the waves, and the marked widening and splitting of the QRS.

Leads 2 and 3. This type of electrocardiographic abnormality seems to be quite constant in angina. Since this condition usually presents few if any suggestive signs, the electrocardiogram may be of great value in diagnosis.

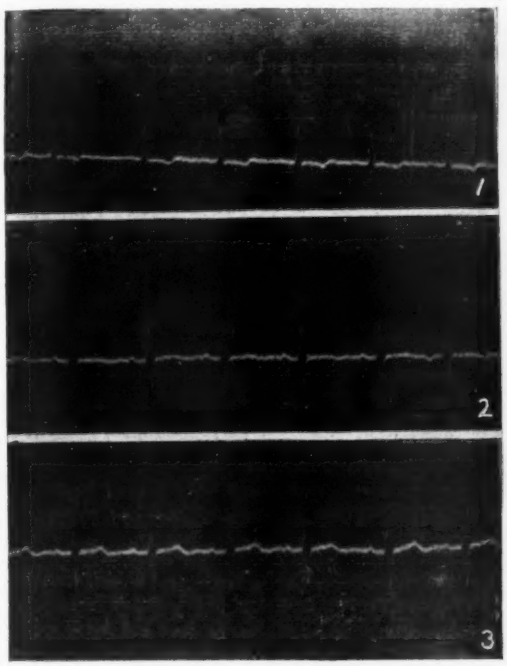

Fig. 16. From a case of hypertension with symptoms of cardiac exhaustion. Left ventricular preponderance and inversion of T and Lead 1.

In the presentation of the above cases, it is not intended to minimize the importance of a careful history and physical examination. The older and simpler methods are still of the greatest value in diagnosis, and the proper interpretation of the data obtained by these methods is all-important for correct diagnosis. The electrocardiogram and *x*-ray will not substitute for the simpler procedures, but, in conjunction with them, will be of great aid in accurate diagnosis. In the presentation of these cases we have attempted to show that a more accurate interpretation of certain physical signs, especially cardiac irregularities and murmurs, may be obtained by these additional methods of diagnosis.

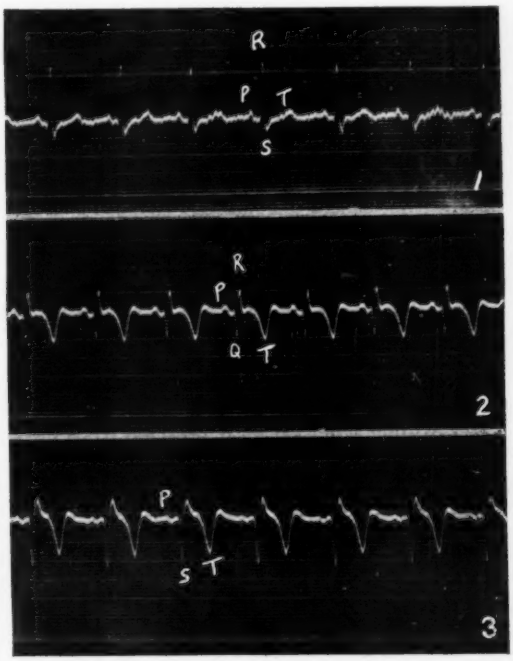

Fig. 17. Deep inversion of the T in Leads 2 and 3, in a case of angina pectoris.

NOTE: I am indebted to Dr. Henry L. Ulrich for the opportunity of presenting these cases.

For the unscientific extravagances to which his doctrine has led him, Bernarr Macfadden, U. S. apostle of body-worship, blatant exponent of "physical culture," has more than once called upon himself the censure of the American Medical Association. Now it appears that England has an intellectual counterpart of Apostle Macfadden in Capt. Anthony M. Ludovici. A lecturer and conversationalist, one-time secretary to the late Sculptor Auguste Rodin, married, 43, Captain Ludovici is ostensibly an opponent of British Feminism, but his book dwells upon the physiological aspects of the argument with all the insistence and most of the exaggeration of a typical Macfadden editorial in breast-feeding, pride in body and "the happy congress of man and wife."—Time, Aug. 24, 1925.

ACUTE ARTERIO-MESENTERIC ILEUS*

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Winona, Minn.

Acute arterio-mesenteric ileus, as a post-operative complication, is characterized by symptoms of high obstruction, principally persistent vomiting. It occurs usually in individuals who have lost considerable weight, and have a ptosis of the abdominal viscera. This is one of the most important and constant etiological factors.

The condition is a true intestinal obstruction, and the obstruction occurs in the transverse portion of the duodenum at the point where it is crossed by the superior mesenteric artery.

The mechanics of the condition is as follows:

In visceroptosis, the small intestines and cecum lie at a lower level than normal, much of them being in the pelvic cavity. In the dorsal position, the weight of the bowel causes a pull on the mesentery and the main trunk of the superior mesenteric artery, the cecum pulling through the terminal ileum. This tension causes an obliteration of the angle which the artery makes with the vertebral column and aorta, thus compressing the transverse portion of the duodenum between the cord-like trunk of the artery and the aorta and thereby producing an obstruction. An acute dilatation of the stomach follows, which tends to aggravate the condition through pressure.

Dr. James McKenty† of Winnipeg has reported twenty-six cases in which he has found a chronic obstruction to the duodenum due to this cause. These patients presented various dyspeptic symptoms. He calls attention to the fact that, in the human abdomen, the antero-posterior diameter, at this point, is less than the transverse, while in all quadrupeds the antero-posterior diameter is greatest, thus giving a much wider angle between the artery and the aorta.

As a result of these conditions the quadruped duodenum is round where it crosses the vertebral column; while the human duodenum is normally flat at this point, due to compression by the mesentery. Thus there is a potential tendency to obstruction here, due to the upright position. This being the case, a little more pull on the mesentery, due to ptosis and the dorsal position, is sufficient to result in the acute post-operative complication which I am attempting to describe.

The symptoms are those of a high intestinal obstruction. There is persistent vomiting of dark bilious material which keeps on in spite of repeated stomach washing. There is no great amount of abdominal distention, and enemas are successful in that plenty of flatus is passed; but the vomiting continues. The patient becomes dehydrated, the respiration shallow, and the pulse rapid and weak. The patient looks, and is, seriously ill.

The treatment is as simple as it is satisfactory. It consists in raising the foot of the bed and resting it on eighteen inch blocks, and turning the patient into the right lateral prone position, thus allowing the cecum and intestines to gravitate upward, and release the tension on the mesentery.

The results of this simple manner are so startling as to border on the marvelous. Within a short space of time the picture changes, the vomiting stops, and the patient is in comparative comfort.

We have recently had two cases of this post-operative complication.

Case 1. A married woman, aged 36, came to the hospital complaining of aching pain in the right lower quadrant of the abdomen, together with soreness and vomiting.

Her family history showed nothing bearing on the case. She had borne three children. By starving herself to reduce her weight, she has recently lost 20 pounds.

Her physical examination was normal except for the abdomen, which was pendulous and flaccid—palpation disclosing a small tender mass in the right lower quadrant.

An appendectomy was done and a cigarette drain placed in a small abscess.

The postoperative course was marked by vomiting, which continued in spite of all efforts to relieve it.

On the second postoperative day the stomach was washed out, and potassium bromide was given per rectum.

On the third postoperative day the vomiting of dark brown bilious material continued all day. The stomach was washed out several times, but with only temporary relief.

On the fourth day the patient seemed to be failing. The vomiting continued all day, and gastric lavage was given every three hours day and night. Dehydration was combated by giving normal salt into a vein several times daily.

On the fifth day vomiting continued as before. The temperature became higher, and the pulse became faster. Lavage and intravenous salt solution was continued as before.

On the sixth day there was no change for the better, and the same treatment was continued until 4 P. M., when the foot of the bed was elevated on twelve-inch blocks, and the patient was turned into the right lateral prone position.

*Presented at the annual meeting of the Southern Minnesota Medical Association, Owatonna, Minn., May 18 1925.

† McKenty, James: Surg., Gynec. & Obst. April, 1924.

At 7 P. M. the stomach tube was passed. There was some dark fluid in the stomach, but not as much as before. The twelve-inch blocks under the foot of the bed were now replaced by eighteen-inch blocks. At 10 P. M. the stomach tube was passed and the stomach was found empty. From this time on improvement was rapid. There was no more vomiting, food was taken, and the patient made an uninterrupted recovery.

Case 2. A married woman, aged 26, who came to the hospital complaining of a dull aching pain in the region of the gallbladder, and a general rundown condition, with loss of twenty pounds in weight.

There has been no tuberculosis or other chronic disease in the family.

Her past history shows that she has borne no children. She had an appendectomy eight years ago; she has had several attacks of gallbladder colic, and she has had pyelitis for about two years, which was proved not tuberculous by cystoscopy and guinea-pig inoculation. The pyelitis has since cleared up.

A cholecystectomy was done.

The postoperative course was marked by persistent bilious vomiting, which continued for three days, in spite of all treatment, including repeated gastric lavage.

We then made a tentative diagnosis of arterio-mesenteric ileus. The foot of the bed was elevated with eighteen-inch blocks, and the patient was put into the righ lateral prone position. The vomiting promptly stopped, and the patient made an uninterrupted recovery.

I cannot help thinking that this may be a more frequent cause of postoperative vomiting than is generally supposed.

Inasmuch as the postural treatment is so simple and effective in suitable cases, and, in any case, harmless and does not interfere with any other measures of relief, it seems to me it deserves to be tried in every case of persistent postoperative vomiting.

DISINFECTION OF HOUSES

It is generally recognized by the more progressive health authorities that house fumigation as heretofore practiced is of almost no value in the prevention of the spread of disease. Many pathogenic germs have only a brief existence outside the body, while even the more resistant varieties are not found on the walls, or ceilings, or hiding in the curtains of a sick room. They are found on articles that have come in contact with the patient. The tubercle bacillus is among the more resistant of the disease germs, partly because of the presence of a waxy substance in the cell wall and partly because in pulmonary tuberculosis it leaves the body inclosed in mucous matter which protects it from the action of sunlight and other germicidal agents. It is doubtful whether the usual fumigators will be of any value in destroying these germs. The only practical, reasonable and effective treatment for a house or room that has been occupied by a tuberculous patient, is a thorough cleansing with soap and water; mechanical removal of material likely to contain the germs is preferable to disinfection and fumigation.

(Jour. A. M. A., Sept. 12, 1925, p. 845.)

SKIN DIPHTHERIA*

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Skin diphtheria is considered a rare affection. This may be due in part to the fact that its appearance is very seldom suggestive of diphtheria. Seldom is a diphtheritic membrane found in skin lesions even when diphtheria organisms are present. Naturally no diagnosis can be established without a culture. Investigators now advise having all slow healing wounds cultured, because the malady is prevalent and cure is comparatively easy if a diagnosis is established early.

REVIEW OF LITERATURE

Before the discovery of the causative organism, diphtheria of the skin was first recognized in Europe, by Chomel[1] in 1759, and by Bard in this country in 1771 during an epidemic in New York. In 1828 Trousseau[2] published an extensive description of the disease. In 1891 Neiser[3] published in Europe the first proof that diphtheria bacilli may be found in the skin. O'Connor[4] found diphtheria in an ulcer of the chin in 1897. Dawson[1] in 1910 recorded ten patients, of whom three were his own. Of these ten, four died because they were recognized too late. Levy[2] reviewing the literature up to 1917 found fewer than fifty proved cases recorded. He claims that the condition is much more common than these reports indicate, since its nature is often unrecognized. Most of these infections have been recognized in patients with throat diphtheria, which, of course, caused suspicion of possible skin diphtheria. However, since then many more records of wound diphtheria have been made in other people as well as in diphtheria patients.

Among the later reports we note that Weinert,[5] in Germany, called attention to this malady in 1918 and during that year 200 cases were recorded in his own vicinity. Biberstein[6] found twenty-three positive cultures in 131 slow healing wounds. Frankenthal[7] reported thirty-three instances with two fatalities. Nieter[8] found 286 positive cultures out of 497 patients where smears were taken from wounds. Hoffman[9] saw 400 slow healing skin wounds in which the cultures showed the Klebs-Loeffler bacilli in sixty. Three of his patients died. Simons, Wearn, and Williams[10] reported five in-

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stances of skin diphtheria with two deaths. Hartsell[11] reported sixty patients without toxic symptoms or fatalities. Fitzgerald and Robertson,[12] investigating one of the military hospitals in Toronto, made a clinical diagnosis of skin diphtheria of one wound presented, in which diphtheria bacilli were found on culture. Stimulated by that, they took cultures from all wounds which did not readily heal. During that summer out of sixty-seven delayed healing wounds, thirty-two showed diphtheria bacilli. Adami,[13] however, found only two in 306 wounds investigated.

These reports indicate that skin diphtheria would be found more often if cultures were taken from slow healing wounds.

REPORT OF CASES

M. D. P., an interne in a contagious ward, intubated a small boy for laryngeal diphtheria. A small laceration just proximal to the nail of the left index finger was noticed at the time. About a week later there was an infection in the finger where he had noticed the laceration during the intubation. This did not heal with ordinary treatment. The culture showed diphtheria bacilli. It did not form an open ulcer, and simply showed a slightly swollen dull red area with slight serous discharge next to the nail. Hypertonic salt solution was applied, *x*-ray treatments were given, and 5,000 units of antitoxin were given intramuscularly. The lesion healed in six weeks.

E. S., a girl four years of age, was brought in on August 25, 1923. She presented three small lesions, each less than 1 cm. in diameter, which had been present for three weeks and did not yield to ordinary care. One was present on the lateral side of the proximal phalanx of the middle finger of the right hand. Another was found just above the left knee. The third was present on the dorsum of the right foot, just above and lateral to the second toe. These lesions were ulcerated, but did not appear inflamed; a serous discharge was present. In only one did the edges appear reddened and ragged. A grayish white thin covering was present on the sore of the finger. All areas were cleaned with alcohol, tincture of iodine was applied and sterile dressings put on. On August 27, the wounds showed no improvement and no changes except that the lesion on the right foot was covered with a thick dirty gray membrane, and cultures showed diphtheria bacilli. Nose and throat cultures at the same time showed diphtheria. The ulcer above the right knee showed no diphtheria bacilli. All lesions cleared up in five to eight days. Treatment consisted in removing the necrotic tissue with a sterile applicator and applying 10 per cent silver nitrate once a day.

ETIOLOGY AND MODE OF INFECTION

The Klebs-Loeffler bacillus is the etiologic agent. Trousseau claimed that a break in the epidermis is necessary for infection. Adler (cited by Levy[2]) thought that a broken epidermis is not always necessary. A guinea pig will develop skin diphtheria when the bacilli are applied to the unbroken skin. The bacilli enter the wound or the weakened skin area from:

1. The nose or throat of the same individual, autoinoculation. Various authors found that 1 to 3 per cent of healthy individuals are diphtheria carriers; hence such are always liable to wound diphtheria when a break occurs in the epidermis.
2. Another person (a diphtheria patient, a carrier, or someone in contact with a diphtheria patient).
3. Infected objects, especially such objects as were exposed to diphtheria bacilli.

PATHOLOGY

The wound may be present in any part of the body, in children or adults. It may have a dull grayish, whitish, or yellowish surface; it may appear necrotic. A distinct diphtheritic membrane may be found which will reappear in a few hours after removal. Removal of the membrane produces bleeding. The discharge of the wound is bloody serous, or it may be a brownish gray thick fluid. The neighboring glands are not usually involved. Trousseau, as cited by Levy,[2] describing skin diphtheria, says: "The wound first becomes painful and a colorless fetid serosity escapes, and a thick grayish flabby membrane appears on the surface. The edges of the wound are swollen and violent red in color. The disease does not usually extend, but remains stationary for months. When the epidermis alone is removed, the raw surface becomes covered with a white membrane, and a reddening like that of erysipelas soon develops around it. On the surface of the latter, the epidermis is elevated in many points by small masses of lactessant serosity. The vesicles thus formed run together and burst, the exposed epidermis being then covered with a white membrane. These new centers join to the main center and to each other, and so the disease spreads. The invasion generally takes place from the superposed parts toward the dependent parts, this probably being due to irritation of the serous secretion. . . . When the disease extends rapidly the fever may be very acute, but it is usually like the hectic fever accompanying suppuration."

Adler (cited by Levy[2]) gives a clinical picture of an experimental case that is worthy of mention. He says: "There are surrounding areas of hard

infiltration, red like erysipelas. These are points of inflammation, which become confluent. The edges of these points are irregular, abrupt. They are yellowish or grayish white. Sometimes dirty, greenish necrotic areas are seen. If separation of the membrane is attempted, the base appears very red and bleeding. In the neighborhood of these there is marked edema. The surrounding lymph nodes are inflamed but not tender."

SYMPTOMS

Constitutional symptoms do not appear early in the disease as in cases of throat diphtheria,—perhaps because the skin does not absorb the toxin as readily as the mucous membranes do. But in extensive involvement or in smaller lesions that toxicity, prostration, vomiting, paralysis, cardiac have been neglected for some time, general symptoms do appear, such as: rapid pulse, fever, complication, and even death.

DIAGNOSIS

1. A culture is the chief aid in diagnosis. The patient may be a diphtheria carrier and harbor the bacteria in his nose or throat.
2. History of exposure to diphtheria.
3. A slow healing wound that appears rather stationary for some time.
4. A diphtheritic membrane may or may not be present.
5. A serous or bloody discharge may be present.

DIFFERENTIAL DIAGNOSIS

Skin diphtheria may be confused with impetigo contagiosa, especially if the lesion is small and the crust is not well formed. But impetigo is a lesion involving the superficial layers of the skin, as a rule, without conspicuous areola and without inflammatory base. Impetigenous lesions spread rapidly and become covered with dry yellowish flattened crusts. On removing these crusts we find a reddish, moist, abraded looking surface secreting a watery looking fluid and appearing like an area of abrasion or superficial burn. Unlike that, in skin diphtheria the lesion involves all the layers of the skin and on removal we get a raw looking area with bleeding. Impetigo spreads very rapidly if untreated. The absence of diphtheria organisms substantiates the diagnosis.

Blastomycosis should be ruled out. It usually presents a lesion consisting of an elevated irregular papillomatous area with a moderate sero-purulent secretion. The typical lesion presents an outer zone of viliform processes, next a zone of minute abscesses, and the presence of the spheric capsulated budding organism; also the absence of the diphtheria organisms.

Syphilis of the skin, because of its variability in appearance, should not be confounded with diphtheria. There is no membrane and no tendency to the formation of confluent areas in syphilis. Syphilitic lesions are darker in color and more sluggishly inflammatory in appearance. In addition there are other eruptions and often a history of evidence of the initial lesion. The blood Wassermann and the absence of the Klebs-Loeffler bacilli in the culture will establish the diagnosis.

COMPLICATIONS AND SEQUELAE

Complications in skin diphtheria are rare but have been recorded. Usually complications come with extensive or prolonged involvement. Dawson[1] found four fatalities in his ten reported cases; these were all patients where a diagnosis was established late. Simon,[10] Wearn, and Williams had two deaths out of five skin diphtheria patients. Hoffman[9] had 6 per cent fatalities. Deutschlander,[14] reviewing the older German literature, found only two cases. Anschutz[15] found only two such cases in reviewing the later German literature. That compares favorably with the usual 7 per cent complications of throat diphtheria.

TREATMENT

1. Antitoxin is generally considered as the most important form of treatment, especially if any toxic symptoms are present.
2. Goppert[17] suggests treatment by means of local application of active bacillus coli. He bases his treatment on the experimental work of V. Reische, who noticed that in broth bacillus coli cause a rapid disappearance of bacillus diptheriæ.
3. Biberstein[6] found Eukupin of great value and reports success in treating twenty-three cases.
4. Frankenthal[7] treated thirty-three cases with thirty-one cures. He used sunlight, ultraviolet rays, and acroflavin.
5. De la Riviere[18] had a jet of superheated air playing on the tissues and he reports success in the average of three to five sittings.
6. Wendt[19] and Wallgren report two cases, one of which had toxic symptoms. Both cleared up promptly with Dakin's solution.
7. Hartsell[11] found tincture of iodine (U.S.P.) applied daily the best form of treatment. His

method was to clean the wound with aseptic technic, using a 1 per cent soap solution, ether and alcohol; tincture of iodine was then applied, and this was done every day.

The author found in the case of E. S., reported above, that the lesion on the finger healed promptly when the necrotic tissue was removed by means of cotton on an applicator and then applied 10 per cent silver nitrate, while the other two lesions, which were cleaned and treated with tincture of iodine once a day, showed no improvement. These two lesions, however, healed promptly by treatment with 10 per cent silver nitrate after the necrotic tissue was removed.

CONCLUSION

1. Skin diphtheria is not so rare as is commonly supposed.

2. Cultures should be taken from all slow heal ing wounds. Repeat cultures if necessary.

9. Cure is easy in skin diphtheria if a diagnosis is established early.

Note.—I wish to express my gratitude to Dr. Max Seham for his help and advice.

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THE DEPRESSOR SUBSTANCE IN HEPATIC TISSUE

Attempts to lower the blood pressure through the administration of liver extracts have been reported. Obviously, the use of crude tissue extracts, however potent they may be, is attended with great danger. Protein effects, including a variety of anaphylactic manifestations, are always threatening; furthermore, the tissues yield a diversity of potent products that should not be injected indiscriminately. It is gratifying to learn, therefore, that experiments indicate the constituent of the liver extract which affects blood pressure to be non-protein in character. According to the latest reports, the principle depresses the arterial tension and maintains it at subnormal levels for a long time. One cannot avoid the belief that progress in the possible control of clinical hypertension is imminent.

(Jour. A. M. A., Sept. 5, 1925, p. 750.)

THE MOORE PYORRHEA REMEDY FRAUD

The Government has debarred from the use of the mails the Moreham Company, Fred Hamilton, Moore's Medicine Laboratories, Inc., and Moore's Laboratories, all of Kansas City, Mo. These various concerns have for some time been exploiting, largely on the mail order plan, an alleged cure for pyorrhea. The alleged remedy was found to consist essentially of emulsified coal-tar cresol with a little pyridine or coal-tar base, was emulsified with resin soap. The government presented evidence to show that the medicine would not heal a case of pyorrhea and would not cause "receding, inflamed and bleeding gums" to become "firm and pink," it would not "tighten loose teeth" nor would it "conquer pyorrhea" by causing the germs to "just clump right up and quit the job," as claimed.

(Jour. A. M. A., Sept. 26, 1925, p. 994.)

ACUTE PANCREATITIS*

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ANATOMY

The pancreas is a compound racemose gland analogous in its structure to the salivary glands, though less dense. It is situated transversely across the upper abdomen at the level of the second lumbar vertebra and posterior to the stomach reaching from the concavity of the duodenum to the spleen. It varies from five to six inches in length in the adult; its breadth is about an inch and a half and its thickness about one inch, being considerably greater at its right extremity. Its weight varies from two to three and one-half ounces (60 to 100 grams). It faces into the lesser peritoneal sac, its posterior surface being devoid of peritoneum and in contact with the aorta, the splenic vein, the left kidney and its vessels, the left supra-renal gland, and the origin of the superior mesenteric artery. The pancreatic duct (Wirsung) passes through the entire length of the organ from left to right, receiving the various small ducts of the lobules composing the gland. Near the duodenum this duct is about the size of a small quill. In the neck of the pancreas the duct passes very obliquely downward, back and to the right and comes in contact with the common bile duct. Leaving the head of the pancreas it passes very obliquely through the mucous and muscular coats of the duodenum and usually terminates by an orifice common to it and the common bile duct upon the summit of an elevated papilla, situated at the inner side of the descending portion of the duodenum, three or four inches below the pyloris. A slight dilatation in the duct just before it opens into the duodenum is known as the ampulla of Vater, which is of no little consideration from the surgical standpoint. Sometimes the pancreatic and common bile ducts open separately into the duodenum. Frequently there is an accessory duct, duct of Santorini, given off the pancreatic duct at the neck of the organ and which opens into the duodenum about an inch above the orifice of the main duct. The blood supply to the pancreas is from the splenic, hepatic and superior mesenteric arteries and the venous drainage is all into the portal system. The very abundant arterial supply protects the pancreas against gangrene from occlusion, the necrosis in acute pancreatitis being independent of circulatory disturbances. The intimate connection of the pancreas to the great solar plexis, through the celiac, superior mesenteric and splenic plexes, may explain the agonizing pain, the collapse and frequently associated intestinal paralysis in acute pancreatic disease. The lymphatic connections of the pancreas are to the liver, gallbladder, duodenum and pyloris.

As late as the year 1600, the pancreas was still considered as nature's cushion for the support of the stomach. Wirsung discovered the duct known by his name in 1642, but the purpose of the pancreatic juice was not definitely known until about the middle of the eighteenth century. Pancreatic disorders have been treated surgically for only about thirty years. In 1879 appeared the first article on fat necrosis, which was at that time thought to be a definite entity, its cause being considered idiopathic. Fitz seems to have been the first man who connected up fat necrosis with pancreatic disease. He expressed the conviction that fat necrosis was always secondary to disease of the pancreas.

PATHOLOGY

Three varieties of acute pancreatitis have been recognized by Fitz: the hemorrhagic, gangrenous and suppurative.

In *hemorrhagic pancreatitis* the gland is large and infiltrated with blood, the color of which varies with the duration of hemorrhage and severity of inflammation. Yet necrosis may show on section due to autodigestion. Extensive hemorrhage may be found also in the mesentery and in the retroperitoneal space. It may also appear about one of the kidneys, especially the left.

Gangrenous pancreatitis follows hemorrhagic pancreatitis, but no distinct line of demarcation can be established. The whole gland or any part may become gray and soft and wholly or partly slough from its attachments. The lesser sac may become filled with this material mixed with dark offensive fluid in which masses of necrotic material may be found. This is known as a pseudo-cyst of the pancreas. Occasionally there is a rupture into the stomach or bowel with discharge of the exudate into that viscus.

In *suppurative pancreatitis* a single abscess or multiple abscesses may form and there may be diffuse purulent infiltration of the surrounding tissues. Fat necrosis is rare in this condition. Septic thrombi of the portal vein may follow with

*Read before the Minneapolis Surgical Society, Minneapolis, April 2, 1925.

multiple small abscesses in the liver. The pleura and the pericardium may become infected by the extension of the inflammatory process through the diaphragm. Various bacteria, especially the colon bacillus, are found in the affected tissues.

Fat necrosis or fat digestion is a striking feature of the hemorrhagic and necrotic type of pancreatitis. The condition is rarely found except in affections of this organ. It has been produced experimentally by inserting pieces of pancreas under the skin or into the sub-peritoneal fat and by experiments on the pancreas itself.

ETIOLOGY

There are two main theories concerning the cause of acute pancreatitis.

1. *The infectious theory:* John P. Deaver is the most prominent advocate of this theory. He, with Pfeiffer, has found that infection may spread by way of the lymphatics from a gastric or a duodenal ulcer, from an infected gallbladder or appendix, and has shown experimentally that it is possible. On this point Deaver himself states: "The retrojection of normal bile is, to my mind, practically never the cause of acute pancreatic disease, and only rarely does the retrojection of infected bile damage the pancreas sufficiently to cause chronic pancreatitis. The direct connection between the lymphatics of the liver, the gallbladder, the pylorus, the duodenum and even the appendix to the peri-pancreatic lymphatics was demonstrated by Dr. Pfeiffer and myself some years ago."

Deaver states that infection may enter the gland through four portals: by the blood stream; by ascending infection from the duct, from the biliary tract or duodenum; by the lymphatics; by contiguity from adjacent viscera. "The damming back of active pancreatic secretion within the interstitial substance of the gland is likely to result in hemorrhagic pancreatitis. About 50 per cent of all cases of pancreatitis are associated with disease of the gallbladder or common duct. In the majority of instances the infecting agent is carried by the lymphatics tributary to the pancreas." (Deaver.)

"A gallstone at the mouth of the common bile duct may cause the bile to back up into the pancreatic duct and acute pancreatitis is almost inevitable when infected bile thus reaches the pancreas. The pancreas tissue suffers from the infection, which opens the way to secondary autodigestion of the tissues from the pancreatic juice with resulting fat necrosis." (Deaver.)

2. The second theory of the pathogenesis of acute pancreatitis is that it is due to the entrance of bile or duodenal content into the pancreatic duct and that the symptoms are due to infection and to activation of the trypsin of the pancreatic juice.

Among the men who differ from Deaver and Pfeiffer on their theory of infection via the lymphatic route are Truhart of Germany, Archibald and Gibbon.

Truhart states that the pancreas of a man is not susceptible to bacterial invasion and that the excretory duct rarely allows bacteria to enter. Archibald and Gibbon believe Deaver's theory lacks experimental proof and depends purely upon clinical inferences. Hildebrandt produces fat necrosis in animals by ligating the secretory duct and by lacerations of the pancreas. Flexner has demonstrated fat-splitting ferments in the necrotic areas and also that sterile pancreatic juice may produce fat necrosis. He further claims that bacteria have been but rarely found in the necrotic foci. He states that trypsin is the direct cause of fat necrosis because it can always be found in those areas and it is never found in normal fat. It has been proven that olive oil injected into the duct of Wirsung will sometimes produce necrosis of the pancreas and fat necrosis in the surrounding fat. This has been explained to be the result of the pancreatic juice splitting up the fat and producing a soap. This soluble soap permeates the pancreas, destroying it. These experiments were most successful at times when the stomach was full of food. Dr. Carl Eggers thinks that similar conditions may play a rôle in the human body because at the height of digestion the duodenum contains much fatty material and some of its contents may pass through the papilla and enter the duct of Wirsung. This, he explains, could be more possible if there were a dilatation of the papilla caused by the previous passage of a gallstone. (At this point it might be stated that acute pancreatitis frequently follows the ingestion of a heavy meal.) Even if the papilla were not dilated by the passage of a gallstone it would not be difficult to imagine that relaxation of the sphincter might occur, allowing duodenal contents to enter the duct. We know that other sphincters, as, for instance, the pyloris and the sphincters of the ureters, under certain conditions allow regurgitation and it is agreed that catarrhal jaundice is the result of inflammation extending up the common bile duct from the duodenum. It has

been further demonstrated that bile injected into the duct of Wirsung will produce necrosis of the pancreas, brought about probably by the activation of the fat-splitting ferment trypsin by the bile. It was proven by Dr. Eugene Opie in 1904 that this method of development is possible, due to a gallstone obstructing the papilla. Archibald and Gibbon state that three conditions must be present to make possible the passage of bile into the duct of Wirsung. There must be: (1) a change in the composition of the bile, increasing the proportion of bile salts; (2) undue resistance, perhaps amounting to a spasm of the common duct sphincter; (3) an abnormal rise of bile pressure in the biliary system, either in the gallbladder or in the common duct. There are others who contradict the possibility of acute pancreatitis being the result of bile entering the duct of Wirsung.

Recent research suggests that the necrosis is the result of autolysis from activation of the pancreatic secretion by bacterial action, the bacteria penetrating into the pancreas in infected bile or intestinal juice. The resulting autolysis entails necrosis and the toxic substances then penetrating deep into the surrounding tissues induce the severe general symptoms as they are absorbed. Exceptionally, the activation may be the work of bacteria by way of the blood or lymph, or there may be embolism or thrombosis. But under all circumstances the direct causal agent is the activated trypsin, its action on the parenchyma causing the typical acute necrosis. It is evident, therefore, from the various views expressed above, that no one thing is admitted, by the various men who have studied the subject, to be the sole and direct cause of acute pancreatitis. Dr. Eggers believes after a careful survey of the experimental data and after a review of his own cases:

(1) Infection by means of the lymphatic extension plays no rôle in the production of acute pancreatitis.

(2) That regurgitation of duodenal contents may play a rôle. He states that theoretically regurgitation is possible and that in three of his six cases the onset of symptoms occurred at the height of digestion.

(3) That the gallbladder and bile probably are in some way connected with the development of acute pancreatitis. In five of his six cases gallstones were found, and in the sixth a disease-thickened gallbladder. He states that he is unable to say whether bile actually entered the pancreatic duct, or whether a gallstone or a spasm of the sphincter temporarily obstructed it and caused increased pressure, with subsequent rupture of the pancreatic duct.

SYMPTOMS

A sudden acute abdominal seizure, overwhelming pain, in an apparently healthy, usually obese individual, accompanied by incessant vomiting, upper abdominal distention, a transverse resistance not easily elicited, weak pulse, abnormal temperature, collapse and sometimes cyanosis, should suggest acute pancreatitis. The previous history will usually show attacks of severe epigastric pains which have been regarded as gallstone colic and have been treated as such. "Not infrequently the first attack of this kind occurs during or soon after pregnancy." (Deaver.)

In the course of a few hours there is usually some swelling of the epigastrium. Some jaundice may appear owing to obstruction of the common bile duct by a gallstone in the diverticulum of Vater or by swelling of the duodenal mucosa, etc. Nausea and vomiting are early symptoms, increasing in severity, but without relief. The temperature may be normal or abnormal in case of hemorrhage without inflammation and may be slightly elevated in the inflammatory cases, in which the fever may be preceded by chills. The bowels are usually constipated. Should the patient's life be prolonged, peritonitis appears, the pain and tenderness continuing and the abdominal muscles becoming rigid. Marked distention of the abdomen, constipation, a rising temperature, a rapid and thready pulse, intense thirst, delirium, coma, then occur in rapid succession, ending in death.

If an abscess occurs in the pancreas it may rupture in the stomach or bowel with the result that blood, pus and pancreatitic detritus appear in vomitus or stools.

Pain is by far the most important and persistent symptom. It is sudden, severe and overwhelming. Its character is colicky and located in the epigastrium, usually slightly to the left of the median line. Sometimes pressure will relieve it to some extent, but most frequently morphine has to be resorted to.

Vomiting is the next important symptom. It is persistent, lasting until operation, or death. The vomitus contains bile, food and mucus.

Collapse symptoms soon appear and sometimes

the patient is cyanosed. The physical signs depend on the stage during which the patient is seen. Most patients are seen early and during this period the signs point to some acute lesion in the upper abdomen. There is usually no distention and slight rigidity during the first day or two. The most marked sign is extreme tenderness above and slightly to the left of the umbilicus.

DIAGNOSIS

Within the last years there has been a great increase in the number of reported cases of acute pancreatitis, which proves that the symptom complex is becoming more familiar to the medical profession. But a preoperative diagnosis of acute pancreatitis is more rarely made than any other abdominal condition. There is no one definite pathognomonic sign or symptom and furthermore it is nearly always seen in individuals who have had severe abdominal disorders and frequently the extremely desperate condition of the patient necessitates surgical intervention before a definite diagnosis can be made. Diagnosis is possible if the patient is seen within the first forty-eight hours. The onset is sudden, characterized by excruciating pain, persistent vomiting and signs of collapse. Neither the abdominal distention nor the rigidity is so pronounced as in other acute abdominal conditions. Deaver states that he is of the opinion that many of the conditions diagnosed as acute indigestion, angina, etc., where the patient gives the history of having eaten excessively, is stricken with sharp, acute epigastric pains, followed by depression which lasts only for a short time and recovers in a few days, are instances of mild, acute pancreatitis. The pathology in these cases is a very slight punctate hemorrhage into the pancreas.

The history is important because most cases of acute pancreatitis will give a history of having previously had gallstones or appendicitis or duodenal ulcer. Bearing in mind the difference between the intensity of the symptoms and the slight distention of the abdomen, one should at least think of acute pancreatitis, especially when the patient is apparently healthy and the attack has come on soon after eating a heavy meal. There is usually a leucocytosis with a relative increase in polymorphonuclear cells. The urine may show a small amount of sugar. Blood sugar may or may not be increased.

DIFFERENTIAL DIAGNOSIS

(1) A perforating ulcer of the stomach may be suspected, but can generally be excluded by a previous history of pain after food, hemorrhages, and the more general peritonitis that usually follows. (2) Perforating ulcer of the duodenum may present much difficulty, as in those cases one has not the history of pain on food ingestion and no history of hemorrhages. Moreover, the pain may be as severe and even collapse may be present. In addition, the two conditions are found most frequently in males over forty years of age. (3) Perforation of an infected gallbladder may also simulate acute pancreatitis. When it is possible to get a blood chemistry made, a hyperglycemia is frequently found, especially if the tail of the pancreas is involved. The urine may contain albumin, casts, sugar and lipase. (4) An irritant poisoning may simulate acute pancreatitis, but can usually be excluded by the history and by the character of the vomitus. (5) Intestinal obstruction is the condition most frequently suspected. Early collapse is not usually present in intestinal obstruction. The vomiting does not appear so early in the course of the trouble. Fecal vomiting seldom occurs in pancreatitis. The pain is not so sudden, severe and overwhelming. A hyperglycemia or glycosuria is never present in intestinal obstruction except in diabetics. (6) Stone in the common duct may closely simulate acute pancreatitis. It may be excluded by absence of collapse, a history of previous attacks and pain referred to the right shoulder region.

Bartlett states that there is no pathognomonic sign or symptom, but the condition of acute pancreatitis should always be thought of in all acute upper abdominal conditions in which the symptomatology is not definitely that of any of the ordinary disorders. The preoperative diagnosis in one of the author's cases of acute pancreatitis which he reports in this paper was perforating ulcer of the duodenum, and in another was stone in the common duct, and in another, empyema of the gallbladder.

PROGNOSIS

The prognosis depends upon the amount of damage done, the intensity of the process and the stage at which the operation is performed.

TREATMENT

In those instances where there is a tumor-like prominence, as a result of the process, the incision is usually placed directly over it. This will usually be in the median line or slightly to the

left. Having opened the abdomen, the further steps of the operation will largely depend upon the investigation of the pancreas. The routes by which the pancreas is most easily approached are: (1) through the gastro-hepatic ligament; (2) through the gastro-colic omentum, or (3) through the transverse meso-colon. The head of the pancreas can perhaps best be reached via the gastro-hepatic ligament and the body and tail best via the gastro-colic omentum.

On first opening the peritoneal cavity it may be concluded that acute pancreatitis is present if hemorrhagic fluid escapes, and if the omentum present in the wound shows areas of fat necrosis. At this stage it is well to examine the whole of the upper abdomen, *e.g.*, gallbladder, duodenum and stomach, for coexisting pathological conditions. As stated above, cholelithiasis is present in more than half of the cases of acute pancreatitis. The pancreas is usually enlarged, tense and discolored. It may be soft in the necrotic type. Having exposed the pancreas through the gastro-colic omentum or by another route, the next step is to relieve the tension within the pancreas by opening into its substance by limited incisions or knife point punctures. This, however, should be done after the viscera are well packed off. This relieves the blood and fluid within the pancreas, affording relief and reducing the tension and furnishing free drainage, which constitutes the chief surgical indications.

Drainage may be accomplished by a composite rubber and gauze drain emerging through the median abdominal incision. It is well to bring the drain to the surface in a conduit of rubber, thus protecting the drain-tract from the digestive properties of the pancreatic fluid. It sometimes happens that the incisions for drainage made in the pancreas will bleed considerably. It may therefore be necessary at times to suture or pack them.

The gallbladder, if found to contain stones and if the patient's condition warrants it, should be removed. Drainage is usually not necessary, but if it is thought wise the drain should be brought through a small separate wound to the right of the first incision. It must also be seen that a blockage by a calculus of the common duct opening into the duodenum is not present. While it is generally impossible to stop to remove the calculus in the usually desperate circumstances of these operations, the performance of a cholecystostomy will allow an outward drainage of bile, and the stone which blocks the ampulla can be removed when the patient's condition is better. Posterior drainage through an incision placed in the left costo-vertebral angle is considered by some surgeons a necessary part of the operation. This is especially true if the tail of the pancreas is the part principally involved. The head of the pancreas is, however, the part most frequently involved and because of its position, anterior to the vertebral column, posterior drainage is not so readily effected.

Adhesions are often found in these cases, and may have to be separated by blunt dissection, before it is possible to expose the pancreas in the wound. Operation should be performed immediately upon the discovery of the condition or suspicion of the condition, before fat necrosis becomes extended and secondary peritonitis occurs.

CASE REPORTS

Case 1. Mrs. F. W., aged 52, mother of three children, gave history of having severe attacks of pain in the upper abdomen over a period of ten years. The condition had been diagnosed as gallstones after the *x*-ray picture showed the presence of a shadow in the gallbladder region. She refused operation. Six months after last gallstone attack she was seized with pains more severe than she had experienced in her previous attacks. The pain did not come as suddenly, but was similar in character and was more persistent. It was not relieved on pressure. Vomiting was more continuous than in previous attacks. She was taken to the hospital and operated upon at once. The pre-operative diagnosis was stone passing through the ducts.

Her temperature at the time of operation was 100, pulse 100, respirations 26, urine negative for sugar and albumin. Blood sugar .095, leucocyte count 12,000, 75 per cent p.m.n. A general anesthetic was given and a right upper rectus incision made. On opening the abdomen the gallbladder was found filled with stones. A few small grayish areas of fat-necrosis were present in the omental fat, no stones palpable in the common duct. On palpation, the pancreas was found enlarged and tense. The pancreas was exposed through the gastro-colic omentum and it was found to be dark in color. Fat-necrosis was present throughout the lesser peritoneal cavity. The pancreas was opened by a blunt instrument and a cigarette drain sutured in the substance of the gland.

Nothing was done for the gallstones, as the patient's condition was not good. The wound was closed with plain and chromic catgut and silkworm gut.

The recovery was quite uneventful with the exception of vomiting, which persisted for two weeks. Pain was severe for the first week. Drain was removed on the fourteenth day. Wound entirely closed on the twenty-fifth day. The patient reported several times a year for two years and up to that time had had no attacks of gallstone colic.

Case 2. W. S., male, aged 39, married, entered the Minneapolis General Hospital Dec. 22, 1922, and gave the following history: thirteen days before, the patient returned from work complaining of nausea and slight pains in the

upper abdomen. He was given something hot to drink and thereupon he started to vomit. The vomiting was persistent all the following night. The pain in abdomen became more severe and a physician was called who gave a hypodermic and prescribed liquid diet to be started after twenty-four hours. A second physician was called that second day who made a diagnosis of kidney trouble and sent him to Jordan for mud baths. The patient remained there eight days, during which time the symptoms become more severe. He was brought back to Minneapolis and the second physician made a new diagnosis of pancreatitis and suggested operation, which was refused. A third physician was called and he diagnosed the condition as a malignant tumor of the liver, causing intestinal obstruction. At this time there was a palpable mass slightly to the right of the median line. The patient then consented to go to the General Hospital (13 days after the onset). The patient's symptoms on entering the hospital were severe, colicky, griping pain in the mid-abdomen, slightly to the right of the median line and radiating to the left shoulder and lumbar region. A distention of the abdomen was present and had been coming on for a week previously. The vomiting, which had improved to some extent, now became worse—the vomitus contained mucus, bile and streaks of blood. During the time the patient was at Jordan he became deeply jaundiced, but this had cleared up by the time he entered the hospital. The tenderness over the abdomen, which was slight at first, now became extreme over the entire abdomen. He gave no history of a previous, similar attack. The stools, which he had only after enemata, were clay-colored. Blood pressure was 180/125, temperature was 99 and pulse 130. The urine contained albumin and a trace of sugar. The leucocyte count was 18,000. The physical examination showed a well-developed man, weighing about 175 pounds. Skin negative, pupils equal, regular and reacted normally to light and accommodation. Ears, nose and throat negative. Chest negative, heart normal in size but rapid (130 per minute), tones regular, no murmurs. The abdomen was distended considerably, a distinct mass was palpable over the gallbladder region about four by five inches. Dullness was present over this area, but the rest of the abdomen was very tympanitic. Abdominal wall was rigid, especially on the right side, and peritoneal irritation sign was present generally. The extremities were negative, reflexes negative.

The pre-operative diagnosis was empyema of the gallbladder with probable rupture. I operated him the night of his arrival, using local anesthesia. The omentum which presented was studded with small, white fat-necrosis areas. Considerable sero-sanguinous fluid was present in the abdominal cavity. A large mass, indefinite in character, was found in upper abdomen. In passing a blunt instrument into it a large amount of sero-sanguinous fluid escaped (about 16 ounces). This reduced the size of the mass slightly. Three cigarette drains were inserted deep in the opening and the wound was closed with chromic catgut and silkworm gut. Gas anesthesia was employed only during the deeper exploration of the abdomen. The pulse reached 160 on the morning of the following day and in the evening became uncountable. Respiration became gasping and patient died at 10 P. M., twenty-four hours after the operation.

An autopsy was limited to examination through the surgical wound. The outer portion of the mass was adherent to the omentum, transverse colon, pyloric portion of the stomach and duodenum. In the base was found a partly necrotic pancreas. Liver and gallbladder were normal. No stones were found in the gallbladder.

The real condition present here was an acute gangrenous pancreatitis with formation of a pseudo-cyst in the lesser peritoneal cavity.

Case 3. D. W., male, aged 54, entered the Minneapolis General Hospital October 7, 1923, giving the following history: The evening before he had felt sick to his stomach, but ate a light supper and went to bed. At 5:30 in the morning he was seized with a severe cramp-like pain in the upper abdomen and vomited. A physician was called and he was sent into the hospital. He stated that seven or eight years ago he had an attack that was somewhat like this one and since that time he had had several slight attacks, but did not stop work. Temperature was normal and pulse normal on entering the hospital. A heavy trace of albumin was present in the urine. The leucocyte count was 22,400, 88 per cent p.m.n. Blood pressure 124/80. Vomiting was almost continuous on his arrival. The vomitus contained no blood. The abdomen was not distended, but very tender over the upper left quadrant. No tenderness to the right of the median line. Pain was severe in the epigastrium and in the lumbar region. Bowels were constipated. A diagnosis of acute pancreatitis was made and he was operated at once.

On first inspection of the abdominal cavity no pathology was apparent. Gallbladder was found normal. No evidence of pyloric ulcer. Appendix normal. No fat-necrosis present in general peritoneal cavity. No fluid present in general abdominal cavity.

On palpation of the head of the pancreas with one finger through the foramen of Winslow, it was found larger and softer than normal. The gastro-colic omentum was opened and areas of fat-necrosis found all about the pancreas. The pancreas itself was dark red in color. Two openings were made into the substance of the gland and the ends of two cigarette drains anchored there. The abdominal wall was closed with plain, chromic and silkworm gut.

The temperature went up to 100 and 101 during the first post-operative week, but reached normal on the eighth day. The pulse during that period varied between 90 and 105. The drainage was profuse during the first week, after which time it slackened and disappeared entirely on the tenth day. The drains were then removed. The catgut sutures were digested during the first four days and it was necessary to add more silkworm sutures, which was done in bed under novocain. Vomiting continued for four days after operation, but he complained of very little pain. Recovery was complete and the patient was up on the twentieth post-operative day.

Case 4. I. U., male, aged 68, entered the Minneapolis General Hospital December 29, 1924. Two days before he had begun to have indefinite pain in the epigastrium. Pain was constant and did not radiate. One day ago he began vomiting without relief. Today the pain became worse and seemed to be most severe in the lumbar region and left chest posteriorly. Bowels had not moved for two days. He had no chills, temperature 100 and pulse 90 on

admission. He had had no similar attacks before. The abdomen was slightly distended and generally tender. Tenderness was especially acute over the epigastrium and left hypochondrium. Peritoneal irritation sign was present over entire upper abdomen. Slight rigidity of recti was present, but no palpable masses. Vomitus did not contain blood, urine negative, leucocyte count 18,400, p.m.n. 68 per cent, blood pressure 150/110. The patient gave the appearance of being acutely ill and an emergency operation was decided upon. The pre-operative diagnosis was perforating ulcer of duodenum. Abdomen opened by high right rectus incision. A small amount of bloody fluid escaped. The omentum was covered with numerous small white spots. On inserting a finger into the foramen of Winslow a large amount of sero-sanguinous fluid appeared. The gallbladder was thickened and filled with stones. On palpation the pancreas was found very much enlarged and tense. The approach to the pancreas was made through the lesser omentum. On inspection it was found to be very dark in color with considerable fat-necrosis in the immediate vicinity. The lesser peritoneal cavity was exposed and incision made into the capsule of the pancreas. The pancreatic tissue was opened by inserting a Kelley forceps. A large cigarette drain was sutured in the pancreas and brought out through the lesser omental opening.

As the patient's condition was fair at this time the gallbladder was opened and the stones removed. A large tube drain was put into the gallbladder and another cigarette drain placed down at the foramen of Winslow. The abdomen was closed with plain and chromic catgut and several silkworm gut sutures. The operation was done under gas-oxygen anesthesia. The pulse increased to 120 on the morning of the following day, but both temperature and pulse were normal twenty-four hours after the operation. Vomiting stopped and he said he felt better. On the second post-operative day his temperature reached 102.5 and he started coughing and expectorating bloody sputum. His pulse went up to 160 in the evening of that day. He became cyanosed, respiration became gasping and he died fifty-two hours after operation. It was my opinion and that of a consultant that a coexisting pneumonic condition, brought about possibly by the anesthetic, contributed to his death.

Case 5. E. L. The case is that of a colored woman, forty-one years of age, who was admitted to the General Hospital August 18, 1924. She had had nine miscarriages at two or four months; two children; married four times. Late in the morning of the day of admission the patient was seized with a sharp pain in the epigastrium which radiated to her back, between the shoulder blades and down the spine. The attacks came on at intervals of five to ten minutes. She had had numerous similar attacks in the past three years. She had had five attacks during the past month. With these attacks she had definite chills and fever. Following an attack she had noticed clay-colored stool on numerous occasions.

On admission she had a leucocyte count of 13,000, with 61 per cent p.m.n. August 19, the urine was amber, acid, 1,021, albumin plus, sugar negative, occasional red blood cells and a few pus cells, occasional hyaline casts; trace of bile. August 20, she developed physical signs of pneumonia. August 22, and again August 28, the urine showed the presence of sugar. No acetone or diacetic acid. August 22, 10,900 leucocytes; the Wassermann was positive; bile pigment in blood plasma negative. On the 25th her abdominal tenderness practically disappeared. On the 31st she became drowsy and the following day went into coma and died. The blood sugar was .789 per cent on September 1.

Diagnoses: tabes with crisis; abdominal angina; cholecystitis.

Autopsy findings: The subcutaneous fat is 5 cm. in thickness. The peritoneum and omentum are studded with flat cheesy areas about 5 to 10 mm. in diameter. The appendix is small and retrocecal. The diaphragm is at the third intercostal space on the right and the fourth rib on the left.

No adhesions or fluid in the pleural cavities. The pericardial cavity contains about 10 c.c. of clear fluid. The left lung weighs 420 grams, the right 480 grams. Crepitation is reduced in the lower lobes and on section there is an increased amount of fluid and blood, no pus.

The liver weighs 1,575 grams. The capsule is smooth. The organ is soft. The cut surface is pale yellow. The cut edge everts. The gallbladder contains about ten calculi of different sizes. There is a small calculus about 5 mm. in diameter in the common bile duct about 2 cm. from the ampulla of Vater, which partially occludes the passage. The biliary ducts are dilated slightly. The gastro-intestinal tract is negative except that there is a small diverticulum about 1.5 meters from the ileocecal valve. The head of the pancreas is grayish and soft. The body and tail are grayish red and extremely soft in consistence. On section the lobular markings stand out. There is a small area of necrosis in the center of the body which shows greenish discoloration. At the tail of the pancreas is a large, ill-defined cavity, surrounded by the spleen and the hepatic flexure of the colon and containing a foul-smelling grayish liquid with flakes of whitish soft material. A similar cavity is found at the head of the pancreas behind the duodenum and pylorus which also contains fluid of similar character.

Diagnoses:

1. Gangrenous pancreatitis with cyst formation.
2. Fat necrosis of omentum and peritoneum.
3. Cholelithiasis.
4. Cloudy swelling of liver, kidneys and heart.
5. Edema and congestion of lungs.
6. Fatty degeneration of liver.

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SPLENECTOMY FOR HEMOLYTIC JAUNDICE: WITH REPORT OF CASE*

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The following case of hemolytic jaundice in an infant, with apparently complete cure following splenectomy, is of sufficient interest to warrant reporting on account of the early age at which symptoms appeared. As far as I am able to determine, this patient is the youngest child, reported in the literature, that has been subjected to splenectomy for hemolytic jaundice.

For the opportunity to submit this report and the complete data of the clinical observations during the hospitalization of the patient prior and subsequent to the splenectomy, I am indebted to Dr. E. D. Anderson of the Staff of the Minneapolis General Hospital. Dr. Anderson made these observations, the diagnosis, and referred the case to my service, recommending surgical treatment.

The patient was a female child, born July 2, 1922, at full term, normal delivery. The weight at birth was 8.5 pounds and the infant appeared to be in normal health for the first two weeks of its life. At this time the mother noticed the beginning of jaundice, and the following week, or about the twenty-first day following birth, Dr. Anderson first observed the patient. Examination of the blood at that time showed the hemoglobin to be 18 per cent. By means of a series of thirteen sinus and intra-peritoneal transfusions he was able to bring the hemoglobin up to 70 per cent and the r.b.c. count was 4,000,000.

The patient was admitted to the General Hospital December 11, 1922, at which time the hemoglobin was estimated at 28 per cent, r.b.c. 2,000,000, w.b.c. 31,000. A series of blood transfusions (four intra-peritoneal) were given and on January 27, 1923, the patient left the hospital with a hemoglobin report of 66 per cent, r.b.c. 4,000,000, w.b.c. 13,500, the diagnosis being splenic anemia.

The clinical notes at this time, summarized, showed that when her blood count went down to 2,000,000 her blood smears showed bone marrow stimulation, e.g., much polychromatophilia and many microcytes. As the red cells increased to 4,000,000 the bone marrow stimulation disappeared and the blood smear showed a picture of normal adult blood. When the red count was low, the white count was high, and if the red count approached normal the white count also showed the same tendency. The feces were negative to occult blood.

The child did not do well at home and was readmitted to the General Hospital February 22, 1923. Hemoglobin at this time was 21 per cent, r.b.c. 1,380,000 and w.b.c. 26,000. Large mononuclear leucocytes predominated. After seven intraperitoneal blood transfusions the blood showed hemoglobin 66 per cent, r.b.c. 4,000,000. The urine showed occult blood following the transfusions. The feces remained negative. The patient again left the hospital April 25, 1923, improved, but did not do well and was readmitted for the third time August 10, 1923. She was anemic, jaundiced and listless. The sclera and skin showed quite a marked icterus. The child was irritable, refused feedings and appeared to be in pain when the abdomen was palpated. The spleen at this time was enlarged to a considerable extent, being palpated as low as the crest of the ilium. The hemoglobin now showed 22.4 per cent, r.b.c. 2,000,000, w.b.c. 19,000. Four intraperitoneal, and two jugular blood transfusions, were followed by a rise of the hemoglobin to 66 per cent, r.b.c. to 4,000,000, w.b.c. 16,000. On September 29, 1923, patient unfortunately developed varicella and during isolation the blood count was reduced to 47 per cent, r.b.c. 2,500,000, which, following three jugular and one intra-peritoneal blood transfusions, rose to 70 per cent, 4,000,000 and 11,000 respectively.

The laboratory reports on fragility and urobilinogen tests were as follows:

Fragility test while under the care of Dr. Anderson was found to be normal on two occasions.

FRAGILITY TESTS

12-28-22. Fragility test normal, r.b.c. 4,000,000, w.b.c. 13 000.

8-22-23. R.b.c. 2,800,000, w.b.c. 16,000. Numerous nucleated reds. No hemolysis in 1 per cent saline. Hemolysis began in .6 per cent saline and was complete in .4 per cent saline.

8-27-23. R.b.c. 2,400,000, w.b.c. 15,000. Hemolysis began at .7 per cent and was complete at .34 per cent.

9-25-23. Hemoglobin of 66 per cent, r.b.c. 4,000,000, w.b.c. 16,600. Occasional microcytes. Hemolysis began at .48 per cent and was complete at .38 per cent.

UROBILINOGEN EXAMINATION

Duodenal contents.—

1-3-23. Urobilinogen negative. Urobilin 1,700 degrees.

1-9-23. Urobilinogen negative. Urobilin 2,800 degrees.

Feces.—

8-20-23. Urobilinogen 4,800 degrees. Urobilin 5,200 degrees. Total 10,000 degrees.

8-22-23. Urobilinogen 8,000 degrees. Urobilin 4,800 degrees. Total 12,800 degrees.

8-23-23. Urobilinogen 7,600 degrees. Urobilin 4,000 degrees. Total 11,600 degrees.

8-24-23. Urobilinogen 8,000 degrees. Urobilin 4,800 degrees. Total 12,800 degrees.

8-27-23. Urobilinogen 7,200 degrees. Urobilin 6,000 degrees. Total 13,200 degrees.

9-5-23. Urobilinogen 4,400 degrees. Urobilin 5,200 degrees. Total 9,600 degrees.

9-7-23. Urobilinogen 2,400 degrees. Urobilin 4,800 degrees. Total 7,200 degrees.

On October 24, 1923, the hemoglobin showed 56 per cent, r.b.c. 3,800,000. At this time I removed the child's spleen under ether anesthesia. The following day the hemoglobin had dropped to 40 per cent, r.b.c. 3,000,000, and from this time on there was steady improvement in the blood picture. The fourteenth day following operation the hemoglobin was 63 per cent, r.b.c. 4,400,000, w.b.c.

*Read before the annual meeting of the Minnesota State Medical Association, Minneapolis, April, 1925.

24,000, many microcytes, few macrocytes, no nucleated reds, no polychromatophilia.

The family history in this case was of interest. The father and mother, each aged 29, had been married in 1917. The first child was born in June 1919, a male, became jaundiced and died at 11 days, the jaundice being persistent. Twin boys born May, 1920, were normal, but suffered from icterus neonatorium. The paternal grandmother had one child, normal at birth but which developed jaundice at three weeks and died at six weeks.

Diagnosis--hemolytic jaundice.

Two main forms of this disease are recognized at the present time: (a) the congenital, or familial type, of Mikowski; (b) the acquired type described by Hayem and Widal.[1] While there may still be some question as to the relation of these two types, it appears to be the consensus of opinion that certain facts to date warrant such a classification. The congenital, or familial type, of which the case reported is an example, is stated to be twice as common as the acquired form.

Clinically, the types are very similar, but the onset is different. In general the congenital type is "exceedingly chronic (Moynhan[2]) in its duration and quiescent in its manifestations," while the "acquired form may begin abruptly and run an eager rapid course from the first." "Anemia quickly becomes profound, the red cells falling to one million within a few weeks." "The crises of pain, temperature and deepened jaundice are more frequent than in the congenital type."

The essential clinical features of hemolytic jaundice are:

1. Fragility of the red blood cells, the most characteristic feature.
2. Acholuric jaundice, *i.e.*, jaundice with stools and urine unaltered in color, no itching or bradycardia. Urobilin, however, is present in the urine, signifying marked hemolytic action, the exact whereabouts in the body at present unknown.
3. Enlargement of the spleen.
4. Anemia.

Fragility of the red blood cells, a diminished resistance to hypotonic salt solution, is stated to be, by some authorities, a constant feature of the blood. However, Elliott and Knavel, in a most excellent review of the literature and report of cases, state that fragility is not constantly increased in all cases of hemolytic jaundice. It was not materially increased in two individuals of a certain family. It is, therefore, likely that the degree of fragility changes from time to time in certain cases. In the case here reported, Dr. Anderson found, as has already been stated, that the fragility tests on two occasions were normal. Increased fragility may be found in other conditions, but is unusual.

Jaundice being acholuric differs fundamentally from that of ordinary obstructive jaundice. There is no bile in the urine or feces. There does not occur the intense itching of the skin. The jaundice is not so intense, but is of a more yellowish color, although at times in the acquired form it may show an intensification during the crises which appears to be the result of increased or massive hemolytic activity. Accompanied by fever and pain, the picture at such times may most strongly suggest mechanical obstruction of the bile ducts, and the differential diagnosis may be difficult, or impossible.

The congenital or familial type seems to run a more placid course with less disturbance, and as Chaufford has stated, "they are more jaundiced than ill"; and, as Moynhan puts it, "patients suffering from this type are frequently as little concerned about their yellow skin as they are the color of their hair and may consult a physician only for some other malady." Many such patients live quite comfortably their allotted time, dying from some other cause. However, Boyd reports characteristic severe crises in the familial type.

The majority of such types, however, sooner or later suffer some additional distress from changes which are secondary in the liver. Gallstones are present in a large percentage of cases as well as fibrosis and cirrhosis.

Urobilin is present in the urine and is usually increased when crises occur.

The spleen in hemolytic jaundice is moderately enlarged, increasing in size during the crises, and while easily palpable is seldom painful or the cause of discomfort except at time of crises.

Anemia.—The case reported gives a fairly typical blood picture with the red cells falling to 2,000,000 or less, although often the count remains between 2 and 3 millions. The white count increases, as a rule, as the red count falls, and decreases relatively as the red count increases, as was noted in this case. Bone marrow stimulation appeared when the red cells fell to 2,000,000, disappearing when the count by transfusion reached 4,000,000.

The anemia is due to hemolysis. What causes it is still the question, some observers laying the fault entirely to the spleen, others to instability of the blood. However, there seems to be much evidence in favor of the former theory, for certainly, upon removal of the spleen, the clinical results in this type of splenomegaly are so gratifying that one is convinced that the main offending element is eliminated. To say it is a surgical satisfaction is putting it mildly. The results at times are dramatic.

The treatment in cases requiring attention is surgical. Not all cases of this disease seek aid and they may not suffer sufficiently to attract or demand attention, and may submit to their malady feeling it is their cross to bear through life. However, once the diagnosis is made, surgery is indicated. Splenectomy is a specific for hemolytic jaundice. Kanavel's collection of cases, the Mayo Clinic statistics, with other periodical reports of cases, such as this, is sufficient evidence that by proper surgical aid the results are most striking. Kanavel's reports show two deaths in forty-eight cases. The Mayos report two deaths in forty-nine cases.

Ordinarily, in the majority of cases, splenectomy is not a difficult operation. However, as in appendectomy, certain conditions, the result of adhesions, infection and anatomical relations, may present the most formidable and dangerous surgical and technical difficulties, and tax the surgeon's dexterity and ingenuity.

The case herein reported was splenectomized at the age of fifteen months. Under ether anesthesia the left rectus incision extended from the left costal margin down close to the anterior superior spine of the ilium. Upon opening the peritoneum hematomas and blood clots were noticed free in the peritoneal cavity with adhesions to the parietal peritoneum and to the surrounding viscera. There were several rather soft adhesions between the small bowel and the bladder. There were adhesions between the omentum and the parietal peritoneum; a rather recent blod clot was present in the omentum; there were adhesions from the hilum of the spleen to the parietal peritoneum anteriorly, to the diaphragm and from the spleen to the parietal peritoneum posteriorly. The perisplenic adhesions were firmer than the textbook account of such a condition. The spleen extended from the dome of the diaphragm to a point three fingers' breadth below the left costal margin. It was freed anteriorly from the stomach wall, posteriorly from the pancreas and surrounding vessels; the posterior and anterior vessels were ligated separately, being careful to omit tying the tail of the pancreas. The peritoneum was closed with plain catgut, the fascia with chromic; four silkworm sutures and the skin was closed with plain catgut.

Post-operative diagnosis: Familial hemolytic icterus; chronic splenitis with adhesions to the parietal and visceral pleura.

Following the operation there was a marked increase in the pulse rate, with a temperature of 102 the first day. Then improvement came rapidly, both pulse and temperature becoming normal. By the fourteenth day the red cell count had risen to 4,400,000, the white cells were 24,000, and the hemoglobin 63 per cent. The surgical wound healed without interruption. The child has remained well and this last week, now twenty months since operation, is well (hemoglobin 80 per cent, r.b.c. 5,000,000, w.b.c. 20,000).

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DISCUSSION

DR. ARTHUR N. COLLINS, Duluth: I think this is the second thrill of the afternoon. We have heard the earliest case of splenectomy for this or any other type of splenic disease reported, and have also had called to our attention the work of Dr. Mann, which is exceptionally good, and of which we hope to hear more. Dr. Wilcox' case brings out a point I think we should take note of, and that is transfusion into the abdomen in children. As I remember, the literature states that these clots absorb very slowly. It is a question whether only the recent clots were present at the time of operation, or some of the older ones also.

Since 1913 the view concerning these cases has changed somewhat. This is a hemolytic and not an obstructive jaundice, as the name implies. Johnson, of Pittsburgh, reviewed considerable of this work and reported a case of hemolytic jaundice in a man, aged 23, whose sister also had jaundice. He had no bile in the urine. The Wassermann reaction was negative, as is usual in these cases. The spleen was enlarged, extending past the midline and below the umbilicus. X-ray therapy was used and decreased the size of the spleen, but this was accompanied by increase in the jaundice. Johnson states that after splenectomy in the acquired familial type the fragility of the cells has been corrected and their normal resistance to hemolysis restored. However, in this congenital type we have to remember that the normal fragility may not be restored by splenectomy. The red blood cells in this disease are abnormally fragile, while in the obstructive jaun-

substance produced in excess by the spleen, which renders it an easy prey. As noted by Johnson, this fragility tends to disappear, after splenectomy.

There is a diffuse fibrosis of the spleen in hemolytic jaundice. In 1887, Spencer Wells, in England, performed splenectomy for this condition, and it was performed again in 1895 by Bland-Sutton. Since Banti, in 1903, there have been numerous splenectomies for this condition. Splenectomized patients have been traced for from two to five years and many patients have apparently been in good condition. Banti's first case was reported in excellent health eight years after operation. A case was reported by Laws and Bates before the Philadelphia Academy of Surgery in 1923, an acquired hemolytic jaundice in an adult, in which repeated transfusions were done in an effort to bring the patient up to a point where splenectomy might be done, the transfusions failed and the patient continued to grow worse. In one of the later transfusions the patient went into shock after about 8 c.c. of blood had been injected. During the discussion among the members of the Academy it was brought out that the cases one wishes to splenectomize are the very ones that are likely to have the greatest difficulty with reactions from transfusion, and this may occur after the first two or three transfusions have been successful.

I have had no personal experience with hemolytic jaundice. The few splenectomies I have done were for other conditions. The technical difficulties of splenectomy are not insurmountable if one is careful. The blood supply is from the celiac axis and the tail of the pancreas is in close proximity. According to Sir Berkeley Moynhan, splenic adhesions are not so common in this condition as in some others, in pernicious anemia, for example. I have found it of advantage to leave a hot pack in the splenic fossa for a few minutes after the spleen has been dislodged. This helps to check the oozing of blood. The jaundice should clear up within a week following operation.

This is an unusually interesting case of Dr. Wilcox's, occurring in so small a child. There was no bile in the urine or feces and it is undoubtedly a case of hemolytic jaundice. We are very fortunate in having had it placed on record before this Association.

DR. H. M. CONNER, Rochester: This case is of interest to the internist as much as to the surgeon. I wish to emphasize the fact that acquired hemolytic jaundice is, in our experience, probably more common than the familial type. In the last few months we have seen two very severe cases. A young woman took sick with acute jaundice, which cleared up after a time. She then had another attack during which her hemoglobin was very low and her temperature high. By means of a number of transfusions, I think eight or ten, we got her to the point where we felt safe in doing splenectomy. It seemed that the blood was destroyed almost as fast as we could pour it in and we had to transfuse her every three or four days. Following operation she has now made, so far as I know, a complete recovery. We have not seen her for three or four months.

Another case, the oldest in our knowledge, was that of a man seventy-six years of age, who came in with a jaundice which began about two months before he came to the Clinic. He gradually failed, much like a case of pernicious anemia, which was our first diagnosis. He was very weak, the hemoglobin was very low and the index was high. It was only the very high percentage of reticulated cells in the blood, a little over 80 per cent, and the marked increase in fragility that gave us the right diagnosis. This man did not respond, as does a case of pernicious anemia, to transfusion. Many transfusions failed to raise the blood count because he destroyed the blood as rapidly as it was poured in.

I wish to emphasize the fact that we are on dangerous ground when we make a diagnosis of hemolytic jaundice in cases that show no increase in the fragility of the cells. Such cases do occur, such as that of Dr. Wilcox, and I wish to congratulate him for putting on record the youngest case of hemolytic jaundice that has been operated. Undoubtedly, these cases do occur, but they are rare.

COLLODAURUM

From the circular matter that is sent out for Collodaurum by the Ideal Skin-Suture Material Company, Two Rivers, Wis. (which acts as the distributor for the Kahlenberg-Klaus Company, Two Rivers, Wis.), it appears that Collodaurum is essentially the same as the product formerly marketed as "Colloidal Gold." The "colloidal gold" of the Kahlenberg-Klaus Company was reported on by the Council on Pharmacy and Chemistry. The Council reported that the manufacturer of "colloidal gold" referred to a publication by Dr. E. H. Ochsner as evidence for the claim that the remedy has proved far superior to the roentgen ray and radium in the treatment of inoperable cases of cancer and also as a "postoperative treatment." This evidence showed that until more critically studied cases, supported by microscopic examination of the tissues, are reported, in which there has been demonstrable retrogression or disappearance of the tumors, there is no reason for believing that "colloidal gold" offers anything more in the treatment of carcinoma than do the other colloidal preparations that have preceded it. *(Jour. A. M. A., Sept. 26, 1925, p. 997.)*

WHAT DO PHYSICIANS PRESCRIBE?

The impression seems to be prevalent, although without any definite evidence, that physicians are again tending to the prescribing of ready-made formulas, and that the art of pharmacy is becoming less and less a necessity to modern medical practice. A survey made under the Commonwealth Fund is, therefore, interesting. One thousand prescriptions (one hundred from a state) were examined: 51.9 per cent contained only official ingredients; 29 per cent contained both official and non-official ingredients; 19.1 per cent contained only non-official ingredients. The study was extended, and 17,577 prescriptions were found to contain 40,454 ingredients of which but 10 per cent were proprietary. The study also indicated that the filling of prescriptions is not, as has been believed, largely a matter of transferring a proprietary or secret formula preparation from one container to another. The results of the investigation indicated that physicians are holding in a large measure to the ideals urged on them by their instructors and emphasized by the Council on Pharmacy and Chemistry. *(Jour. A. M. A., Sept. 5, 1925, p. 750.)*

TUMORS OF THE TESTIS: MALIGNANT AND INFLAMMATORY*

F. C. SCHULDT, M.D.
St. Paul

Considerable effort is being spent by the American Society for the Control of Cancer to enlighten the public on early cancer formation. Radio broadcasting by members of the profession has been instituted. Volumes have been written by research laboratories, physicians, surgeons and radiologists, and still we feel a tremendous handicap when an advanced malignancy of the testis presents itself.

In an endeavor to have all the cases of malignant testis on record, I wish to here present one case of malignant tumor of the undescended testis. In addition, I shall report one case of tuberculosis of the testis and one of an inflammatory tumor of gonorrheal origin.

The extreme malignancy of carcinoma or embryonal teratoma testis, due in part to the far-reaching and hidden lymphatic system of this region, calls forth the best that surgical knowledge and skill can furnish in attempting to prolong the life of the patient.

In the brief space of time allotted to me, I shall touch upon salient features only, bringing to your attention some of the outstanding facts in the literature.

Case 1. Mr. C., aged 20, was first seen September 29, 1924, complaining of a pain in the lower left quadrant of the abdomen. In July, 1923, he had been operated on for a left sided hernia and his surgeon reported to me that there was a mass in the left side of the scrotum which consisted of a hematoma. Microscopic examination at that time confirmed the clinical findings. The patient stated that he had never had a testicle on the left side of the scrotum, but had had, as long as he could remember, a lump, which he accurately pointed out, corresponding to the region of the internal ring. When he was a small child his mother sought medical advice and was told that this mass was an undescended testicle and that when it should get larger it would come down into the scrotum. A month before he had noticed the lump enlarging, becoming elongated and sausage shaped. This, as he pointed out, reached nearly to the external ring. In several attacks during the previous two months he had suffered severe pain on defecation. He had had no fever or chills at any time; no nausea or vomiting. He had worked every day. After a long auto ride he noticed extreme tenderness and suddenly he was aware that the scrotum was filled with something. At that time he sought medical aid and the operation followed. The undescended testicle probably had become malignant and the trauma of the ride caused a hemorrhage.

On September 29, I found, on rectal examination, a mass occupying the left pelvis about the size of an orange. This mass was very tender, semi-fluctuating, and reached a little beyond the midline and nearly up to the umbilicus. The mass was slightly movable on examination. Venereal infection was denied. The leucocyte count was 18,000. No occult blood was found in the stool. An opaque enema showed under fluoroscopy no obstruction in the bowel, but the sigmoid loop pushed to the right side.

Upon operation, October 1, 1924, an incision was made mesially to the former incision and here was found a large fluctuating mass occupying the left pelvis retroperitoneally. The tumor, bluish in color, was freed with some difficulty. It was attached by a pedicle which proved to be the cord, as the vas and epididymis could be recognized. It was now evident that we had further metastasis in the posterior wall of the bladder to which the tumor was atached. This area corresponded to the region of the right seminal vesicle and was about the size of a half dollar, a metastasis contact. No other masses were felt.

Pathological Diagnosis: Malignant testicular tumor, carcinoma type, of undescended testis on the left side.

A large tube was placed for radium to the back of the bladder and radium was applied at the pedicle at once. In a few days radium was placed into the tube back of the bladder. In all, he received 1,475 mg.h. of radium.

During October he was given crossfire *x*-ray, 20 m.a.h. in all.

On December 2, a good-sized mass could be palpated on rectal examination corresponding to the implantation on the bladder. This was very tender. He was given 16 m.a.h. in December.

On January 3, he was suffering much pain in the lower abdomen. On rectal examination there could be felt in his pelvis three distinct tumor masses, which were very tender. General appearance of patient was not favorable. He was losing weight and looked very pale. He had a distinct pain and tenderness over the right hypochondrium, which suggested metastasis along the lymphatic chain. He was too weak to come to the office for treatments, so he went to the hospital, where Dr. E. Schons gave him 36 m.a.h. over a period of nine days. His skin had become quite bronzed, having received 72 m.a.h. of *x*-ray, in all.

January 30, 1925. On rectal examination, there is a pronounced shrinking of the tumors. He feels better and eats better. In fact, he feels well enough to run his car.

On February 12, he complained of more pain in the abdomen and a pain in his chest of a week's duration. *X*-ray of chest failed to reveal any lesions.

May 24, patient died. Extensive metastasis of retroperitoneal glands.

Case 2. Mr. H., aged 39, was injured in his right groin by falling against the corner of a show-case, about the end of May, 1923. I saw him June 18, 1923, when he complained of a pain in the right groin extending into the right scrotum on lifting. He stated that the testicle became swollen after the injury and he felt nauseated. He had had a gonorrhea seven years before.

*Read before the annual meeting of the Minnesota State Medical Association, Minneapolis, April, 1925.

Examination revealed two hard nodules in the right epididymis, tender to the touch. The corresponding seminal vesicle was indurated and tender on pressure, while the left side was normal. The blood Wassermann was negative.

In view of his history of gonorrhea and his injury, a diagnosis of an inflammatory tumor was made, possibly of a tuberculous nature, since the seminal vesicle seemed involved.

On June 27, the right testicle was exposed and in the globus major of the epididymis were found two small nodules, the size of small hazelnuts. These appeared inflammatory and an epididymectomy was done, including a portion of the vas. Wound healing was complete.

The patient made an uneventful convalescence. No *x*-ray or radium was given. It is now twenty months since the operation. On a recent examination to determine the exact status, I found a healthy appearing man with entirely negative findings in the scrotum; on rectal examination, the prostate and seminal vesicles were normal with clinically no masses in the retroperitoneal region.

There was some difference of opinion at first regarding the malignancy of the tumor. The microscopic picture in some areas showed a very cellular tumor, although no mitotic figures appeared. Certain areas showed ducts of the epididymis surrounded by dense thick layers of fibrous tissue. The tubules and stroma were filled with polymorphonuclear leucocytes. The diagnosis of an inflammatory tumor due to latent metastatic gonoccoccus infection was made by Dr. E. T. Bell, Professor of Pathology at the University of Minnesota.

Case 3. Mr. U., aged 20, was seen for the first time May 24, 1922. He complained of pain and swelling in the left testicle and a pussy discharge. Five months previous he injured the testicle severely by accidentally striking a chair against it. This caused immediate pain and swelling and soreness followed. He did not reveal this to anyone until a pussy discharge appeared five months after the injury. His general health then was not good. In fact, his mother noticed his reluctance to participate in activities with other boys. The discharge began three days prior to his coming to the office. The pus was of a flaky nature, which at once suggested a tuberculous infection. A large sinus in the indurated scrotum led into the region of the epididymis. The right testicle and epididymis and both seminal vesicles were normal. Albumin was present in the urine.

On June 2, the left cord, epididymis, testicle and a good portion of the scrotum were removed. Wound healing was good and his general condition improved rapidly.

On July 10, five weeks after the operation, the right scrotum became enlarged, containing a fluid. With a trocar, two ounces of clear fluid were removed. It was evident, however, that there was further pathology present. Aspiration was repeated in three days, but a week later the fluid had again accumulated.

An operation was performed on the right side July 21. A hydrocele was excised. It was noted that the epididymis was hard and tuberculosis was feared, but it was not excised, as my feeling of conservation was rather keen at this time.

Progress was favorable until October 13. The right side was then much swollen, the epididymis hard and a pain radiated into the lower abdomen.

On October 28, the testicle was made free and the epididymis dissected free from the testicle. An abscess containing about one dram of pus had broken into the testicle. This area was cleaned out, iodoform powder applied, and the wound closed completely.

By December 28, 1922, the wound was closed, the testicle was in good condition, the seminal vesicles normal.

February 3, 1925. A painful gland was found in the right groin, the seminal vesicles were both very hard, but only moderately tender. Temperature was normal. It was noted that the seminal vesicles could be palpated with precision bimanually, the mass being about 0.5 inch in thickness. For over a period of two years he had been in excellent health, taking on much weight and growing in stature considerably. A urinalysis sediment revealed two definite palisaded tubercle bacilli. *X*-ray of the chest showed some tiny healed calcified nodules, but no active lesion.

Embryologically the testicle develops from mesenchymal tissue to the inner side of the urogenital fold, retroperitoneally along the lumbar spine. In its descent it carries with it the tubules of the mesonephros which, in the male, become the epididymis, while the mesonephric duct or Wolffian duct becomes the vas deferens. The site of its embryological development was its closest connection to the lymphatic glands, and after its descent the distance does not alter its direct communication with the primary lymph nodes which lie along the spine upon the large vessels.

The descent of the testicle may be incomplete. It is found in the cul-de-sac of Douglas with a very short pedicle.

Edington[1] reports a malignancy of an abdominal testicle that he found posterior to the bladder, to which was attached epiploe of the sigmoid. From here in its descent the testicle may halt in any position within the canal, the commonest site being at the internal or external ring.

Testicular tumors are classified into three general groups: malignant, inflammatory and benign. Hinman makes the following classifications:

A. Malignant group—
   1. Seminoma or unicellular origin.
   2. Teratoma or derived from two or more layers.

B. Inflammatory—
   1. Tuberculosis.
   2. Gumma.
   3. Hydrocele.
   4. Hematocele.
   5. Gonorrhea.
   6. Traumatic.

C. Benign—
1. Fibroma.
2. Lipoma.

The diagnosis of tumor of the testis is not difficult, but the differential diagnosis between lues, tuberculosis or malignancy requires all the technic of precision that is known to clinical and laboratory experts. In reading the literature we see with regret the mistakes made in considering the tumor benign where the delay was a priceless error.

Of all carcinomata, this is the most malignant, due to its specific embryonal type. No effort should be spared, no means of diagnosis overlooked in an attempt to make an early diagnosis. At all times when confronted with a case of testicular tumor we should thoroughly examine three body areas: (1) the scrotal contents; (2) prostate and seminal vesicles; (3) the retroperitoneal region (by palpation).

Transillumination should be used whenever possible, but it is not always reliable, as a hematocele would not transmit light, while a malignant tumor containing cartilage and pockets of mucoid material might. In tuberculosis, growth is more rapid and may be associated with slight temperature. These tumors are tender to the touch.

Tumors of the testicle occur at all ages. Hinman[2] quotes the most likely period from the age of twenty to fifty. Malignancy occurs on one side only, but a bilateral malignancy of carcinoma type is reported by Tanner[3] dating back to trauma. The radiating pain of metastasis is important to note, as it simulates either gallbladder disease, appendicitis or a duodenal ulcer, and may also simulate pain of the kidney area.

The inflammatory changes of the testicle have been well classified for some time past, but in neoplasms Tanner[4] regrets that the ontology and classification is not so good.

All cases of doubtful diagnosis should have a blood Wassermann test, since several articles have reported finding a gumma after an extensive operation for malignancy had been done.

Rathburn[5] reports two cases of testicular tumor in both of which the diagnosis could not be determined without microscopic examination.

A rather extraordinary finding is reported by Zausch[13] in a young man of 21 years, who developed a right sided testis tumor and at the same time a retroperitoneal tumor. A rapid decline and death followed. The autopsy showed a teratoma of the testicle, a retroperitoneal tumor the size of a child's head, which microscopically was identical with the testicular tumor in age and structure. This established the fact that this was a multiple malignant tumor, not a metastasis. He determined that the tissue age in both was identical and that both had their origin from identical embryological tissue, a germinal rest remaining *in situ* at the time of the descent of the testicle. The large metastasis in the liver was of much larger cells and did not have a teratoma nature.

FREQUENCY

Delafield and Prudden report the ratio of nondescended to descended testicle as 1 to 500, while Edington[1] puts the ratio of malignancy of undescended to that of the descended testicle as 1 to 5.5. Malignant tumor of the testicle they found to be rare, about 1 in 2,100 of all male admissions.

Lund had not seen a malignancy in an undescended testicle in twenty-seven years, but in a period of four years following saw four cases. He made an attempt at establishing the percentage ratio of the malignancy in the normal to the abnormal position. He determined that malignancy presents itself 10.3 times more frequent in the normal than the abnormal position. However, the ratio of the undescended to the normal position being 1 in 500, malignancy occurs in a higher percentage in undescended testicles. Bowing[6] states that malignancy of the undescended testicle constitutes one-third of testicular malignancies.

Trauma has been an outstanding etiological factor both in malignant tumors and tuberculosis of the testis. This is due to the exposed position of the testicle, the undescended gland lying in the inguinal canal being constantly traumatized, while the intra-abdominal gland receives no trauma. Tanner[4] states that the testis in the abdomen is immune, the testis in the scrotum more or less susceptible, while when the gland is in the inguinal canal it is very prone to malignancy. In Case 1 the site of the testicle was at the internal ring.

TREATMENT

One is struck by the little attention that is given in the literature to etiology, symptomatology and diagnosis of these conditions. Considerable space is devoted to treatment. Surgery is dominant in all malignant and inflammatory tumors whatever else may be done in addition. Radium, *x*-ray and vaccines are employed with considerable success.

Hinman[7] recites three historical periods of radical surgery:

1. Attempts to remove appreciable abdominal

metastasis. To this period belong Kocher, Tuffier, Morris, Witzel, Bland-Sutton and others.

2. In the second period we have advocates of the high cord excision.

3. The third period has developed the present radical lymph node extirpation based upon a thorough knowledge of embryology and anatomy.

After single castration did not reduce the frightful mortality, and after the high cord excision had not influenced the abdominal metastasis, the more radical procedure of lymph node excision was evolved.

To one having a knowledge of the development of the germinal gland, its embryological position and changed adult position, it is not a disillusionment to find metastases in lymph nodes lying upon the large vessels as high as the inferior mesenteric artery and even higher. Upon this fact Hinman has worked out a radical operative procedure. The technic consists in extending the inguinal incision upward parallel to the twelfth rib. Dissection is carried down to the peritoneum and the peritoneum with intestines enclosed is pushed to the opposite side. The ureter follows the peritoneum. This exposes the vessels and the lymphatic region involved. Theoretically, it would be better to dissect from above downward, but it is more practical to dissect the glands from the vessels from below upwards.

This dissection method is also followed by Bastianelli.

Hinman[7] claims for this radical operation a 100 per cent improvement over simple castration, because in 50 per cent of cases in which there is a malignant tumor of the testicle the retroperitoneal glands are involved. Fifteen per cent might be cured by orchidectomy, but there is no statistical guide that can select these favorable ones. With the remote glands involved so early and even the remotest glands at times first affected, it seems futile to do a simple castration.

Lipschutz[9] tells us that where the malignancy is on the left side the lymph nodes are placed higher than on the right side in two-thirds of the cases.

Hinman[2] advises that where abdominal metastasis has taken place the radical operation should not be attempted. Tanner[4] also holds that radical operation should not be done when clinical metastasis can be recognized.

From a prophylactic standpoint the undescended testis should be removed if it can not be comfortably brought into the scrotum. Lund[10] advises that, after puberty, if the other testicle is normal in position and size, the gland should be removed.

Coley[11] feels that a 10 per cent mortality in radical operation is still high and thinks that better than radical operation is simple orchidectomy followed by treatment with his combined vaccine of bacillus prodigiosus and streptococcus erysipelidæ. Added to this, massive radium packs should be given over the abdomen and left supraclavicular space. This adds no mortality. The vaccine has a tendency to retard or prevent further growth of the malignant tumor. "The inhibiting power," he says, "has been absolutely demonstrated, but is not sufficiently powerful for a permanent cure.

Bowing[8] is enthusiastic over radiation. Hinman[7] points out that the highly specific action of radium on testicular tissue is productive of beneficial effect especially in the seminoma group. The teratoma group is more resistant and spreads more rapidly than the unicellular tumor. The prognosis is extremely bad. In Kocher's fifty-five collected cases there was not a cure.

Various reporters record in the follow-up method statistics 5.5 per cent living after four years, which gives us in the end-results of five years of life a mortality of 94.5 per cent. Hinman feels optimistic. Although his operative mortality in the first group was 12.6 per cent, he had a series of six cases with no operative mortality and the operative result all patients in good health, although in four cases retroperitoneal lymph nodes were involved.

Tuberculosis of the genital tract is also a difficult problem. The clinical finding of a tuberculous epididymitis is not considered an early finding. Young has pointed out that the primary focus usually is in the seminal vesicles, whence it may spread to one or both epididymes, to the prostate gland and bladder, to one or both kidneys and from there become a general disseminated tuberculosis. Guyon, the father of modern urology, preceded Young in this opinion. Young has, for some years, advocated the extensive resection of both seminal vesicles and has worked out a technic for removing the vas in toto together with both epididymes and terms his operation epididymovesiculectomy.

CONCLUSIONS

1. Carcinoma and embryonic teratoma of the testis is one of the most malignant of all neoplasms.

2. When a testicular tumor presents, examine with all diligence the scrotal content, prostate and seminal vesicle region and the retroperitoneal space.

3. The primary lymphatics are far removed from the normal site of the testicle.

4. The occurrence of malignancy in undescended testicle is rare, but the percentage of malignancy is much higher than in testicles in the normal site.

5. The primary site of tuberculosis of the seminal tract is in the seminal vesicles.

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DISCUSSION

DR. E. T. BELL, Minneapolis: These enlargements of the testis and epididymis may be approached from the clinical standpoint to the best advantage. An enlargement on one side of the scrotum may be either testis or epididymis. Sometimes we can tell which organ is enlarged and sometimes not. These are the things we have to consider:

1. *Hydrocele*, which can usually be demonstrated readily by transillumination.

2. *Tuberculosis*, which involves the epididymis almost exclusively. It may give rise to fusion with the skin and fistula formation. We may be able to demonstrate enlargement of the seminal vesicles and thus help in the diagnosis. Tuberculosis of the epididymis does not give rise to a very large tumor.

3. The *gumma* develops almost invariably in the testis, while tuberculosis is almost invariable in the epididymis. We have several specimens of the testis removed with the diagnosis of neoplasm which turned out to be gummas. The Wassermann test will prevent that error.

4. A chronic epididymitis may give us some difficulty in diagnosis. The involvement is usually in the epididymis.

5. The neoplasms are called mixed tumor, embryoma or teratoma. They are called mixed tumors because several kinds of tissue are present. Nearly all have epithelium and some have cartilage. The term "mixed tumors" is appropriate, for all have more than one kind of tissue.

There is no very satisfactory subdivision of the neoplasms. There may be a true dermoid cyst, in which case we know they are benign, or there may be a cyst lined with epithelium in which there may be carcinomatous tissue. We must be careful to examine the entire specimen to be sure that there is no carcinomatous tissue in it. Unfortunately, these adult types are very rare compared with the malignant forms. The majority of these will have carcinomatous epithelium, as Dr. Schuldt showed you. Occasionally a sarcoma is seen.

The relation to trauma was emphasized by Dr. Schuldt. This is a tumor which occasionally is due to injury. In one of our cases there was injury at the age of fourteen from a baseball bat. The testis remained small for ten years and then began to grow. We get such histories often. With a history of severe trauma the patient should be watched and we may be able to pick up the tumor before it gets to the inoperable stage. I think we are justified in removing an undescended testicle in the inguinal canal. As soon as the tumor begins to enlarge it will slip down into the scrotum or back into the pelvis.

A bilateral tumor is more apt to be a gumma. The mixed tumors are usually large, fleshy, soft growths. A very marked enlargement indicates a neoplasm.

The prognosis is extremely grave. From 80 to 90 per cent of these patients die of metastases.

DR. GILBERT J. THOMAS, Minneapolis: I think we are very fortunate in having such a case reported, because Dr. Schuldt so carefully stated his case and so carefully reported the findings.

I have recently heard Dr. Dean and Dr. Barringer read a paper and discuss tumors of the testicle. They have cut down the mortality by their method of using *x*-ray or radium before operation. They have a number of three and four year cures following this method of treatment. They believe it unnecessary to do the operation described by Hinman and think the mortality is not less than when *x*-ray or radium is used to control the metastasis when it occurs. They find that about 30 to 40 per cent of their cases occur between thirty and forty years of age. Of the cases they studied 10 per cent occurred in the undescended type; they did not tell us whether in the abdomen or the inguinal canal.

I have always wanted to have Dr. Bell present when a tumor of the testicle is explored so that we may be sure of our diagnosis. I had him see a case with me three years ago. This patient has gone over three years without evidence of metastasis and is in perfect health.

We have recently explored a tumor of the testis which turned out to be a hydrocele, with no evidences of malignancy. At present I have a man of twenty-eight with a tumor as large as a big grapefruit, with metastasis in the right abdomen. He is receiving *x*-ray and radium therapy, which has improved his general condition and has reduced the size of the tumor.

DR. F. C. SCHULDT, St. Paul (closing): I can add nothing to what has already been said, but wish to thank the gentlemen for their discussion.

MINNESOTA MEDICINE

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EDITORIAL

The Inter State Post Graduate Assembly

The meeting of the Inter State Post Graduate Assembly in St. Paul in October more than fulfilled expectations. The name of the Assembly has again been changed and is in the future to be known as the Inter State Post Graduate Medical Association of North America. Paid registrations this year numbered 1,650 in contrast to 1,565 last year in Milwaukee. The growing popularity of the meeting is likely to tax the seating capacity of the largest auditorium in the future, but we are assured that the Auditorium in Cleveland, where the Association is to convene next year, will be able to accommodate the large attendance which is already assured.

Perhaps the most striking feature of the meeting this year was the industry displayed by those in attendance. The main floor of the municipal auditorium in St. Paul had its 1,200 seats filled and the balcony was called upon to take the overflow each day. Those who wished good seats had to come early. No one who had not attended previous meetings of the Association would have predicted that physicians as a whole had such powers for absorption of knowledge as was displayed. One would have supposed that clinics and lectures from 7 A. M. to 10 P. M. with a scant hour for lunch and supper would have been too much of a good thing. Such was not the case, however.

Clinics in surgery, medicine and the specialties followed each other in rapid succession. Listeners were able to hear the latest interpretations of problems in almost every branch of medical science—an experience which was valuable even to the specialist. About half the addresses were in the nature of clinics and patients with all sorts of afflictions were demonstrated from the standpoints of physical and laboratory examination, diagnosis and treatment by men, many eminent and some less well known, but all professors or associate professors in medical schools of the United States and Canada.

It would be futile to attempt a detailed account of this five-day meeting. Differing opinions were expressed. The outstanding example was the difference of opinion as to the treatment of peptic ulcers. Dr. Deaver of Philadelphia, in his characteristically forceful and engaging manner, proposed that physicians as a whole had such power for the surgical treatment of all such ulcers with gastro-jejunostomy, combined where possible with excision of the ulcer, and gave as his reason the macroscopical and microscopical evidence of lack of true healing in specimens he had removed. Dr. Bevan of Chicago, also an eminent surgeon, recommended dietary treatment in all non-obstructive ulcers and stated that 80 to 90 per cent can be counted on to get well. Dr. Crile of Cleveland emphasized the value of gastric resection with removal of most of the acid-secreting portion of the stomach in patients having symptoms of marginal ulcers following simple gastro-jejunostomy. The problem of the best routine treatment of peptic ulcer has evidently not been finally settled.

The gallbladder came in for its full share of attention. The place held by the appendix a few years ago has been taken by the gallbladder. Dr. Deaver is one of those who sees in the gallbladder a common cause of upper abdominal complaint

and believes in the more radical surgical treatment of this common offender. Dr. Judd, however, presented excellent statistics showing that the best results from gallbladder operations are obtained in patients who have had typical gallbladder attacks. Lyon's non-surgical drainage of the gallbladder received scant courtesy from his fellow townsman, Dr. Deaver.

The possibilities of thoracic surgery in the treatment of malignancies of the esophagus and cardia and the operation of extra pleural thoracoplasty for pulmonary lesions was brought out by Dr. Willy Meyer of New York.

Dr. De Lee of Chicago gave a most instructive address on some of the errors in obstetrical practice and made a plea for more frequent and thorough prepartum examinations, better aseptic technic, and pointed out the importance of conserving the natural immunity of the mother by paying more attention to her general condition and conserving her strength by less anesthesia, Credé expression and instrumentation. The early recognition and correction of occiput posterior presentations, a very difficult feat by the way, was emphasized in this respect.

It is to be regretted that more of the foreign guests could not attend. Lord Dawson, who incidentally possesses many of the attributes we Americans like to attribute to the high type Britisher, by his mere presence and practical suggestions as to the treatment of cardiac diseases, was most engaging.

Some seven hundred physicians and laymen, many accompanied by their wives, attended the banquet. The occasion proved a grand finale.

Dr. John Van R. Lyman of Eau Claire, Wisconsin, who succeeds Dr. Addison C. Page as president, was unfortunately prevented by illness from attending the meeting. Dr. Carl L. Larsen of St. Paul, through whose efforts as General Chairman of the Executive Committee the success of the meeting was largely due, was fittingly elected President-elect of the Association. Dr. Mather Pfeiffenberger of Alton, Illinois, was chosen to succeed Dr. Roland Hazen of Paris, Illinois, on the Board of Trustees. In the future the president will appoint a vice president of the Association from each state in the Union and province in Canada. The invitation of the Academy of Medicine of Cleveland to meet there in 1926 was unanimously accepted.

International Peace

The subject of international peace is in the limelight of public attention just at present and although not a strictly medical subject is of such great importance that we may be pardoned for devoting some space to its discussion.

The whole purpose of all medical activities has been and always will be diametrically opposed to that of war. War is entirely destructive while the work of the medical profession is directed along lines of prevention and cure of human ills. During war the surgeon is called upon to repair as far as possible the damage done by shot and shell. In peace times preventive medicine has done an immense amount of good in preventing the occurrence and spread of contagious disease. The success in the control of such diseases as smallpox, typhoid fever, malaria, cholera and yellow fever is outstanding. The reduction in infant mortality should be mentioned. The combined efforts of the medical professions of the civilized world have saved the lives of thousands of human beings only to have the work many times undone by such catastrophies as the World War. Humanity has played the puerile game of setting men up only to knock them down again.

Recently Dr. Fosdick, speaking before delegates of the League of Nations at Geneva, stressed the essentially unchristian character of war. He was spokesman for many Americans when he said, "Here today, as an American, under this high and hospitable roof, I can not speak for my Government, but both as an American and as a Christian, I do speak for millions of my fellow citizens in wishing your great work, in which we believe, for which we pray, our absence from which we painfully regret, the eminent success which it deserves."

President Coolidge, in his magnificent address to the American Legion in Omaha, presented the subject of war and armaments from the viewpoint of a sane American statesman. Stressing the wantonly destructive character of war he emphasized the advantages of peace. He pointed out that when the military of any country becomes powerful enough to influence the civil government, the liberty of the people becomes threatened. The more democratic form of certain governments since the World War is one of the distinct steps towards international peace resulting from the war. But what a price was paid!

Our late vice president, Marshall, was once heard to remark apropos of his attitude towards war that if anyone insulted his wife he would fight. And so when it comes to defense of our wives and families and, to extend the group considerably further, our country, any red-blooded man can only conclude that defensive war is right. On the other hand, war for aggression is an assumption that might is right, and is absolutely wrong.

Those who see in a League of Nations or a World Court a means of putting an end to or even curtailing war are often accused of being idealistic and impractical. It is argued that war has always existed and always will. This sort of argument does not bear much weight with the medical profession. Clinging to the ways of our grandfathers would have paralyzed medical progress.

When it comes to differences between individuals no one maintains that the stronger individual should prevail. Man has instituted courts to administer justice and police to enforce court decisions. The only way to absolutely outlaw war is by the establishment of a world court with an international force to enforce its decrees.

It is pathetic to consider how many of our civilian soldiers fought during the World War with the feeling that they were, crusader-like, fighting to put an end to war, only upon their return to see a blind reversal of feeling which kept us out of the League of Nations. The issue was given a political aspect which it should never have had. Had constitutional methods been employed in directing our course in the matter, there is good reason to believe that we would now be members of the League of Nations.

The League of Nations has become a rather uninteresting and dead issue. Although the question of our adoption of the World Court on the Harding-Hughes-Coolidge basis has been before the Senate for two years the issue is not a dead one. It comes up in Congress under the head of unfinished business December 17, next. The proposition is not a political one or we would not be dealing with it here. The leading organizations of the country have endorsed it, including the American Bar Association, the Chamber of Commerce of the United States, the Commercial Law League of America, the American Manufacturers Association, the League of Women Voters, the American Federation of Labor, and others. The medical profession should and undoubtedly does endorse it.

The miraculous power that lies in an idea is coming to be more and more appreciated. If the idea of the justice embodied in a World Court becomes universally recognized, a damper will be put on future wars. War will not be entirely prevented without force to compel the acceptance of the decrees of such a court. But at that America's acceptance of the World Court idea will do much to spread the idea of justice rather than war as the settler of international disputes.

Eye, Ear, Nose and Throat Section

Attention is called to the addition in the near future of a new section in our "Progress" department to be devoted to abstracts of current literature on Eye, Ear, Nose and Throat subjects. In the previously conducted sections, there has been no logical place for abstracts in this specialty. Those interested in this line of work are urged to communicate with Dr. Virgil Schwartz, Physicians and Surgeons Bldg., Minneapolis, or Dr. E. L. Armstrong, Fidelity Bldg., Duluth, so as to avoid duplication in abstracting.

MISCELLANEOUS

THE LIBRARY OF HEALTH

Recently a request was received by the Journal for information regarding a publication called the "Library of Health, the Best Home Medical Book in Print," distributed by the Western Distributing Company of Chicago and edited by B. Frank Scholl, M.D. The book has been recently peddled by agents in the territory about Wolverton, Minnesota. Information received from the American Medical Association headquarters shows that the "Library of Health" along with such publications known as "Medicology," "Domestic Medical Practice," "Health and Longevity" purport to take the place of the physician in enabling the purchasers to make their own diagnoses and treating themselves. Some of the volumes contain 1,500 pages and are a half foot thick, but contain material, in some instances at least, written some thirty years ago. While some of the volumes contain articles written by men of standing, the articles have been revamped for use in such volumes purporting to give free medical treatment.

This particular "Library of Health" seems to be a rehash of a similar volume which appeared some years ago under the title "Medicology or Home Encyclopedia of Health." It gives its readers to understand that diphtheria and scarlet fever may be due to exposure to sewer gas, advises leeches for cancer, etc.

The volume is sold on an initial payment of $5 and the balance of $23.50 on the installment plan.

That such a volume at such a price is a poor substitute for the services of a physician is obvious.

OF GENERAL INTEREST

Dr. W. C. Stillwell, formerly of Mankato, is now located at Santa Ana, California.

Dr. William H. Smith, formerly of Cass Lake, is now located at Cold Spring, Minnesota.

Dr. Arthur H. Pedersen of St. Paul has returned from Vienna, where he spent two months in study at the various clinics.

Dr. and Mrs. Harry C. Jensen have returned to their home at 3845 Park avenue, after an absence of four months.

The Southwestern Minnesota Medical Society will hold its next meeting at Lakefield, Minnesota, on Thursday, October 29, 1925.

Dr. Marshall S. Underhill changed his location from the Mayo Clinic, Rochester, to Evanston, Illinois, where he is practicing his profession.

Dr. E. T. Merrill, who has been with the Mayo Clinic at Rochester, Minn., is now associated with the Rochester General Hospital of Rochester, New York.

Dr. H. A. Beaudoux, formerly of Minneapolis, has opened offices for the practice of his specialty in eye, ear, nose and throat diseases at Oakland, California.

Dr. A. C. Strachauer, director of the Memorial Cancer Institute, University of Minnesota, has gone East to visit the cancer hospitals of New York, Boston, Buffalo and Baltimore.

Dr. F. P. Frisch, formerly of Richmond, is now associated with the Quain and Ramstad Clinic at Bismarck, North Dakota, where he is specializing in eye, ear, nose and throat work.

The new cottage for women at the St. Peter State Hospital was opened on August 21. The capacity of the new building is 75 patients. The institution now has a population of over 1,500.

The Minnesota State Medical Association has moved its headquarters and office of its secretary to 11 West Summit Avenue, St. Paul, the new home of the Minnesota Public Health Association.

At the annual meeting of the American Roentgen Ray Society, held in Washington, D. C., September 22-25, Dr. Russell D. Carman of the Mayo Clinic, Rochester, was chosen president-elect for the coming year.

The marriage of Dr. William A. Kennedy of Minneapolis and Miss Helen Marie Dore of St. Paul was solemnized at St. Luke's Catholic church, St. Paul, Wednesday morning, October 7, 1925. Dr. and Mrs. Kennedy will make their home in St. Paul.

Dr. S. A. Slater has leave of absence from his duties as Superintendent of the Southwestern Sanatorium at Worthington, and is spending his vacation in New York state. He expects to return to Worthington about the first of the year. Dr. Otis Britt is managing the Sanatorium in the absence of Dr. Slater.

Dr. Leo G. Rigler has become associated with the Minneapolis Clinical Association as director of the departments of *X*-ray Diagnosis and Radiotherapy at 701 La Salle Building. Dr. Rigler is Director of the Roentgenology Department of the Minneapolis General Hospital and will continue in that capacity.

Announcement has been received of the marriage of Dr. H. E. Wilmot of Litchfield and Miss Dorothy N. Frisch, daughter of Senator and Mrs. John Frisch of St. Charles, Minn., September 12, 1925. Dr. and Mrs. Wilmot are now at home in Litchfield, where Dr. Wilmot has been practicing for the past year.

The Board of Directors of the Hennepin County Public Health Association has unanimously invited Dr. Richard Olding Beard, who recently retired from active teaching service at the University, to take the Field Secretaryship of the Association upon a part-time basis.

Dr. Beard has accepted the appointment, with the understanding that he will continue to devote a major part of his time to the direction of the Committee on Endowment and Building Funds of the Medical School of the University. He is Chairman and General Secretary of this Committee and has been initially responsible for the promotion of its work since its appointment.

Dr. Horace D. Arnold of Boston, President of the National Board of Medical Examiners, has announced that two additional states, Connecticut and Utah, have notified the Board that henceforth they will accept its certificate qualifying physicians to practice medicine in those states. The Board has been active since 1915 in establishing a standard qualifying examination of such character that its certificate can be accepted by all State Boards licensing physicians. Its certificate is now recognized in more than 30 states, and also in Great Britain.

At the last conference of the State Health Officers with the Surgeon General at Washington, D. C., they proposed and unanimously adopted a resolution, asking that the Surgeon General take steps to create a registration area for morbidity reports comparable to the registration areas of the Census Bureau for births and deaths.

The number of insane and feeble-minded, many of whom are in this condition as a result of preventable diseases, is constantly increasing and adding to the burdens of the taxpayer.

During the calendar year 1922, the last for which data are available, there were 78,070 persons cared for in almshouses and 348,928 in homes, day nurseries and similar institutions. In addition to these, there were in hospitals and other institutions for the care of the insane and feeble-minded and epileptics a total of 348,174 persons. Records show that more than 400,000 persons go out from our State and Federal penitentiaries annually; many of those of our dependent classes as well as many of those in penal institutions are suffering from preventable diseases which in some measure are factors in their dependency or delinquency.

It is of the utmost importance that provision be made for the better collection of morbidity statistics, including those diseases which play such an important part in the production of insanity and feeble-mindedness.

MEDICAL LIBRARY ASSOCIATION AND HIGH COST OF GERMAN MEDICAL PUBLICATIONS

At the annual meeting of the Medical Library Association held in Atlantic City in May, one of the most important subjects under discussion was the present attitude of the German medical publishers in the high prices charged foreign subscribers for their medical publications and the greatly increased output of their periodicals.

In compliance with the action taken, the Executive Committee is now making an investigation of this matter. As a result of its findings, it is to decide whether or not concerted action on the part of medical libraries of America will cause the German publishers to curtail their output and reduce the cost of their publications to their American customers.

A number of the libraries in the Association have donated freely of their duplicates and other organizations have provided subscriptions for American medical publications to aid German libraries and physicians in replenishing their depleted files and in acquiring current literature. It appears from the action of the German medical publishers toward American purchasers of their publications that this evidence of good-will and co-operation on our part has been and is little appreciated.

All individual subscribers and purchasers of German medical publications are asked to lend their endorsement to the effort now being made by the libraries. Those willing to join in the movement in order to bring about united action on the part of both libraries and individual subscribers are requested to communicate with Miss Margaret Brinton, Librarian, Mayo Clinic, Rochester, Minnesota.

UNIVERSITY NEWS

The President and the Board of Regents of the University of Minnesota announce the completion of the Cancer Institute and the Todd Memorial Hospital, units of the University Hospitals. They will be open for the reception of patients shortly.

The Cancer Institute was financed through the generous gift of two hundred and fifty thousand dollars to the University of Minnesota by the Citizens Aid Society of Minneapolis, of which Mrs. George Chase Christian is the president, and is a memorial to the late George Chase Christian. Fifty thousand of the amount contributed by the Citizens Aid Society was given to cover the cost of technical equipment, including radium. The Howard Baker Fund, a gift of forty thousand dollars to the University of Minnesota by the Late Howard Baker of Minneapolis, which was originally accepted by the Board of Regents for use in the Department of Surgery of the Medical School, has been set aside by the Board of Regents for the exclusive use of the Cancer Institute, and some of the income thereof has already been used in the purchase of radium.

Mrs. Frank C. Todd, Mrs. E. C. Gale and Mrs. Emory Mapes were liberal contributors to the fund provided for the erection of the Todd Memorial unit, an eye, ear, nose and throat hospital, the balance of the required sum having been provided by the Board of Regents of the University from University resources.

The completion of these units, which are housed in one building joining the Elliot Memorial building on the east, brings the total capacity of the University Hospitals to three hundred beds.

Among the special features of the building may be mentioned the *x*-ray and radium laboratories and the Cancer Outpatient Department with its examining and treatment rooms and offices on the ground floor of the building; a two-story amphitheatre type lecture room having a seating capacity of 154, located in the north section of the building; the Frank C. Todd Memorial Room for the use of the Ophthalmology and Oto-Laryngology staff, located on the fifth floor; and large open porches with southern exposure on each of three floors for the use of the patients.

The terms of acceptance, by the Board of Regents of the University of Minnesota, of the gift from the Citizens Aid Society for the erection and equipment of the Cancer Institute specifically provide for the admission and care of patients who are financially able to pay for care and treatment furnished to them. This class of patients is eligible for admission whether resident in the State of Minnesota or elsewhere.

The University Hospital offers three services to which patients may be admitted, depending upon their economic status, as follows:

1. A Free Service, which is open to residents of Minnesota only, to which applicants must be certified as eligible for admission by a member of the Board of County Commissioners of the county in which the patient resides, under the provisions of Chapter 411, Session Laws of 1921, as amended by Chapter 265, Session Laws of 1923.

2. A Pay Service open to those who are able to bear the cost of hospital service, at minimal rates only, and who cannot pay charges for professional services. Admission to this service may be secured upon the application therefor made by the patient's local or family physician.

3. A Pay Service which, within the limitations of the necessarily small number of beds available for the purpose, is open to those who are able to pay both a hospital charge, covering such accommodations as they may choose, and charges for any professional services which they may require. Admission to this service may be secured through reference by the patient's local or family physician or by direct application to the Superintendent of the University Hospitals. Patients are admitted to this service irrespective of their place of residence.

DR. HILDING BERGLUND

The profession throughout Minnesota and particularly Minnesota Medical School graduates have a very live interest in the medical school. The demands of private practice have necessitated the resignation of Dr. S. Marx White as Chief of the Department of Medicine. Fortunately, Dr. White retains his connection with the school as professor of medicine and will continue to conduct clinics and share in the work of the Committee on Endowment and Building Funds.

Dr. Hilding Berglund has been appointed Professor of Medicine and Chief of the Department of Medicine. Born in Sweden thirty-eight years ago, he assumes his new responsibilities at a comparatively young age. He received his M.D.

at Stockholm in 1916 and after working for some time in the Stockholm Clinic came to Boston in 1920, where he has been working in Biochemistry with Professor Otto Folin at Harvard. After two years at Harvard he became associated at the Peter Bent Brigham Hospital in Boston, continuing research in problems of medicine, using clinical material of the hospital and the facilities of Dr. Folin's laboratory for biochemical study. At the same time he carried on work at the Boston Dispensary. Two years ago he returned to Sweden to qualify for the Docentship, a necessary step towards professorship in that country. He now holds the rank of Assistant Professor of Medicine at Harvard.

His work has acquired for him a national reputation and has been principally upon the following subjects: (1) The relationship between uric acid and gout; (2) uric acid problems, experimental study on animals and man, including gouty subjects; (3) cystinuria; (4) some new observations and interpretations with reference to transportation, retention, excretion of carbohydrates; (5) a colorimetric method for the determination of sugars in normal human urine; (6) a study of chemical and physical characteristics of albumin in albuminuria, etc.

Dr. Berglund comes to us highly recommended by his associates. He is recognized as a man of ability with considerable possibilities in reseach work. He has had clinical experience and a thorough grounding in fundamentals of medicine, both of which are so necessary for an essentially laboratory man. We wish him the best of success in his new field of endeavor.

Resignations of Dr. J. Frank Corbett and Dr. Archa E. Wilcox from the A service of the Minneapolis General Hospital were accepted. Dr. Zierold's appointment to the service was approved.

The following appointments were recommended: Dr. Michael G. Mulinos as Assistant in Pediatrics; Dr. George Geist as Assistant in Surgery; Dr. Benjamin I. Derauf as Assistant in Obstetrics and Gynecology; Dr. P. M. Mattill as Assistant in Medicine.

PROCEEDINGS OF THE MINNESOTA ACADEMY OF MEDICINE

Meeting of September 9, 1925

THE PRESIDENT'S ADDRESS

Dr. Harry P. Ritchie
St. Paul

In relinquishing the President's emblem to the hands of Dr. Henry Ulrich, I thus formally conclude, to me, a profitable and honorable tour of duty as the thirty-ninth president of the Minnesota Academy of Medicine. The gavel, a gift of the late Dr. Frank Todd, is materially new but on its silver face are inscribed the names of all the past officers, with the years of their service, and thus represents the entire history of the organization. One would be densely dull to all sentiment, to all emotion, not to feel an intense pride at having one's name lawfully placed in the sequence with these splendid men. Space is still left for those to follow, a space to be closed in fifteen years. Thus, this instrument of authority carries over from the past, through the present, into the future. Although thirty-eight years, when closely analyzed in word and deed, is a long time, yet, when we visualize all the years to come for these progressive communities of St. Paul and Minneapolis, the great Northwest of magnificent resources placed in the latitude of the earth most conducive to sustained activity, when we look at the splendid University, and the medical school building and builded upon firm foundations, when we count the many youths to enter through its doors and out again, with the diploma of our profession, when we remember the old world societies, and universities, the years of their history running into centuries, when we think of all the unsolved problems of our work, then we can readily say that thirty-eight years is but a beginning and that the members, past and present, are but pioneers.

In its original conception, the Academy brought together men of St. Paul and Minneapolis, at the time of organization far apart. Space and distance are now largely eliminated so that now, although politically separate, geographically these cities are one. Professionally our interests, desires, intentions and efforts are identical. The sphere of contact has broadened and the proceedings now include splendid contribution from the enthusiastic members from Duluth, Warren, Rochester and Eveleth. The record of the Academy is now such that it may assume, if it is not already recognized, the right of the Senior Society of the State. It is no longer a local affair, its influence and purpose no longer for the benefit and progress limited to its own members. Because herein are included men of authority, men of experience in actual practice, able and competent to weigh merit in all branches of medicine, whether fundamental or practical, the opinions here expressed upon that merit and value of methods for the curing of the sick and the relief of suffering are almost final. These opinions should be so placed as to be accessible to every one—and the Academy thus assumes a greater and wider responsibility.

In this organization I find the best plan for progress. Here is a group of men of mature judgment, meeting each other on common ground, representing all branches of medicine, selected as qualified by active practice and wide experience, old enough to be imbued with the sense of the great responsibility of our profession, intensely earnest in the scientific prevention, cure and alleviation of disease and suffering, jealous of the good name of Doctor, and a group which, to my mind, is the culmination of all the complicated machinery of medical education, for whom all research is undertaken and accomplished, for whom all scientific efforts are made: the active practitioner, the man who carries the goods to the patient and practices in the laboratory of humanity.

The word "record" means to preserve in writing, to chronicle, to register. The minutes of the past proceedings are now filed at the State Historical Society. The minutes of

the present are now recorded more carefully and fully than ever before.

The word "tradition" is defined as the delivery or handing down of opinions, doctrines, rites, customs from father to son or from ancestors to posterity by oral communications without written memorial. Tradition is that interesting, indefinite and undetermined field: the influence of one upon the other, seniors upon the juniors, by example in conduct, deportment, interest and effort, by personal contact and intimate advice, the spoken word of unrecorded discussion.

Tradition of the Academy is in the making. In such a small group it is the accomplishments of individuals that contribute to the making of that tradition.

That we are still young as an organization is shown by the fact that charter members are with us, and others old enough in experience and service to be so classified are in constant attendance, contribute to its transactions, influencing us all by their enthusiasm, and proving that, no matter what the years may be, the problems of medicine and surgery are inexhaustible in their interest. It is one of the great dividends and privileges of membership that we meet with them and profit by their advice and example.

During the thirty-seven years of the life of the Academy, there are men who were closely associated with its activities who have completed their life work. They are the ones to whom we may speak. What did they accomplish? Whom did they influence? What were their standards? What did they contribute to the tradition of the Academy?

That I should select those with whom I was in close contact is but natural. What can be said of them might be said in many degrees of others, but of these I can speak more intimately.

FOUR MEN OF THE ACADEMY

Archibald MacLaren was the nineteenth president of the Academy. He lived sixty-six years, dying at his home in St. Paul, October 12, 1924. He was born in Red Wing, Minnesota, coming with his parents, at an early age, to St. Paul, where a part of his boyhood was spent at historic Fort Snelling.

Dr. MacLaren

The record in the Civil War of his distinguished father, Major Robert MacLaren, was a matter of family pride and general recognition. His mother was one of the most lovable, wise and remarkable of characters. From her he received the wonderful traits of gentle manner, courtesy and kindly consideration, so pronounced and evident to all who knew him.

From his father could be traced a firmness of decision, an honesty of purpose and an inbred sense of loyalty: a loyalty given not only to his home, but to his friends, his associates, his church and his country. Wherever he decided to lend himself no medium effort, but entire support was his.

Dr. MacLaren graduated from Princeton in 1880. The College of Physicians and Surgeons gave him the degree of medicine in 1883 and he interned at the Women's Hospital of New York.

These three institutions gave him the foundation for a career which in the early eighties was exceptional in the Northwest.

No attitude of superiority was ever suggested by his manner, but his judgment, experience and results were soon so broadly recognized that he readily attained a clientele which might easily have unbalanced a less steady personality. Influenced by his work at the Women's Hospital, to whose illustrious staff he constantly referred, he was first interested in gynecology. But the inviting problems of other fields led him to broaden his endeavors to care for the conditions well known today, but in the nineties still debatable, which required courage and decision to attack.

Without further remark, it can truthfully be said that the result of his labors is a splendid record of accomplishments in nearly every field of surgery.

In all societies he received recognition and preferment; in the Ramsey County Medical Society, the Minnesota Academy of Medicine, the State Medical Association, of which he was president at the time of his death. Of his special societies he had his greatest enjoyment and profit in the American Surgical Society, always attended its meetings and was each year a contributor to its transactions. At various times he was recorder and vice president.

Early in his career Dr. MacLaren became associated with the University of Minnesota Medical School. He kept up an unflagging interest in this institution and gave his support up to the very day of his retirement. His Thursday clinics at St. Luke's Hospital were maintained over a period of nearly twenty years, at a time in the development of the medical school when such instruction rested upon the individual and his private patients always received constant effort, thought and preparation.

Dr. Charles Lyman Greene, writing a formal memoir of him in this respect, says: "A host of men can testify to the profound impression given, not by any showy demonstration but by imparting to them simply something of his own knowledge, his remarkable and discriminating conservatism, his enthusiasm, his high ideals and the fine ethical standards which were a part of him."

He made many contributions on various subjects, but that in which he most firmly believed and rigorously supported was the limitations of surgery in the asthenic. As his reputation broadened, his office became a clearing house for cases operated upon for chronic appendicitis and unrelieved of symptoms. Early *x*-ray studies showed so many of these patients had ptosis of all the abdominal organs. His writings, with Dr. Daugherty's, received wide attention. Brady, the newspaper writer, reviewed his contribution

under the popular title: "Where Is My Wandering Stomach Tonight?"

When his field of endeavor widened, cases of abdominal inflammation other than female pelvic conditions came to his care. His experience in vaginal drainage led him to undertake rectal drainage for pelvic accumulations in men and the very young. His articles were severely criticized. But his continued support has resulted in the saving of many lives and is a distinct contribution.

He unconsciously developed a unique reputation by his ever readiness to admit, discuss and report his errors. His article on "Mistakes in Surgery," read and printed against stormy pressure, was widely discussed.

He was not only honest with his patients, but honest with himself, believing that by frank consideration of errors and mistakes progress could be best accomplished.

Dr. MacLaren had many qualities and abilities that men admire. He was a champion oarsman, an expert yachtsman, a curler of wide recognition, an ardent golfer, an expert billiardist. He was a sportsman with an exceptional knowledge of firearms, the habit of birds, the work of dogs. It was quite characteristic that he seldom remarked about the bag. With him the game had every chance.

The basis of this splendid life is that at heart and in all his instincts he was a kindly Christian gentleman, kind and considerate in all his dealings with whomever he came in contact, irrespective of station or degree.

The picture here printed was taken after he began to tire, but is selected because it shows this expression of kindly interest, tender, if such a word can be used of so vigorous a personality. But in all the twenty-five years of our close association and daily contact, it is the one most becoming and the one I will longest remember.

Warren Arthur Dennis was the thirty-fourth president of the Academy. He lived over fifty-three years, being cut down in the prime of life by pneumonia. We were classmates, we roomed together in St. Luke's and the City and County Hospital during our internships. There were very few subsequent years in which we did not make some trip together, attending medical meetings and clinics. Our acquaintance began the first day of our medical student life. He entered as an assistant to Dr. Hennricks, in Anatomy, while I went with Dr. Beard, in Physiology. In the old Millard Hall, these two laboratories connected by a door in the rear, and frequent were our consultations upon his work and upon mine.

Dr. Dennis

Warren Dennis was soon placed as the most prominent member of our class. He was somewhat older, because, after graduating from the University of Wisconsin, he taught school in order to obtain funds to carry him through medicine. He had an intense desire for knowledge and was trained to study. He was experienced in the expression of his thoughts, his judgment more mature. He more fully appreciated the curriculum, always acknowledged the efforts of his teachers, always stimulating them by earnest endeavor. He had time to be interested and helpful in the affairs of others, maintaining at all times a model deportment and conduct; no wonder he immediately attained a position of esteem and respect by his classmates, to be held in after years by all who knew him.

Looking backward, it seems remarkable to me how little professional contact we had. Very few cases ever saw us together. But our discussions upon our work were many, and I know this, that he gave more to me than I ever gave him, because he had a most orderly and logical mind and his conclusions upon any set of evidence were most correct.

He interested himself in the affairs of the profession, and wherever he associated himself recognition was given. He was at various periods President of the Ramsey County, the Minnesota Academy of Medicine, District Counselor of the Minnesota Medical Society, Secretary of the Western Surgical Society.

He held a commanding position in the wars: Major Surgeon of the 15th Minnesota in the Spanish-American War and Surgeon and Lieutenant Colonel of the 88th Base Hospital in the World War, and so served in France. Such were his great responsibilities, both of family and profession, that in participation in the recent war extraordinary sacrifices were made, but by so acting he aligned himself with many others, who, by their sense of duty and loyalty, voluntarily contributed their great service.

He was never robust physically. His lack of resistance was well known to his friends. His intense interest in his work led many times to great physical exhaustion and it was under such circumstances that he contracted his last illness.

Below the respect for his character, his personal charm of manner and his sterling worth as a surgeon, I had the deepest admiration of him because his life and accomplishments was a story of unassisted effort. At an early age he lost both father and mother. He was cared for by relatives, to whom during all the succeeding years he made every remembrance. Such a story must be a great stimulus to all those students who have their greatest resource in the hope and desire to work in this great field of medicine.

His literary contributions were not many. He always said he was not ready, but his power and clarity of discussion led him to contribute often spontaneously. His presidential address to this society on "Social Insurance" was a valuable paper.

Of Warren Dennis we can truthfully say that to the abilities which made him a splendid surgeon were added the judicial qualities of mind which marked him not only a wise adviser but a true counselor and friend.

James Edward Moore was the twenty-second president of the Academy. He lived sixty-six years. Dr. Arthur Law, in the Journal of Surgery, Gynecology and Obstetrics, of December, 1924, presented a splendid memoir of his life and accomplishments.

Dr. Moore

I first knew him on the opening of the University Hospital. From then on our contact was almost daily, as it was with each member of the staff up to the time of his death. I came to have a profound respect for him and consider him a real master of surgery.

He had very high ideals and was so dextrous himself in actual work that he expected every one associated with him to be equally so. This applied to every one and he freely expressed himself in criticism of any mediocre work. On two occasions I handed in my resignation from the staff because I thought my pride and standing had been seriously affected by his severe remarks. The only trouble was, that he was right and I was wrong on the cases.

It was his intense desire for good work, nice technic, complete diagnosis and his wide knowledge of surgery that many times caused expressions which could easily have been misinterpreted. He also had a manner suggesting a trait of vanity, a manner inviting the good word and compliment. But I soon found that this was only that sense of exhilaration which comes from a duty successfully accomplished. His work never became a routine, it was always an adventure, a problem to be solved, expertly and delicately to be done. He had the lightest and most gentle touch. I do not believe he ever intentionally hurt a patient in all his life. His manner was soothing and supportive. He carried confidence and decision into the sickroom, the wards and the operating room.

Dr. Law says, in his memoir, that he was a born teacher. I know he was. He had a fine command of English and in his quiet way he had a rare way of holding close attention.

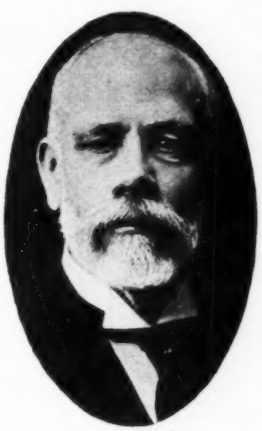
I remember hearing Dean Ritchie remark, in response to the complaint of lack of material by some clinicians as an excuse for failure to meet their classes: "There's Moore, all he needs is a bone and he will give a clinic." This was true, and the drier the bone the more effort he made to give something worth while.

He wrote a great deal, was a constant attendant of meetings, always contributing, if not in formal papers, by terse and logical discussion. One of the prominent surgeons of the country and one of the younger men made individually this significant remark to me: "Dr. Moore's papers upon any subject are always complete and up to date." This latter expression is true of him, too. He never lagged; he was always stimulating to those about him and supporting in his advice and interest in any worthy effort.

He had a great influence in the development of the medical school, lending himself not only to his own department but to the general questions of progress. He was as much a full-time man in his efforts and attention to duty as though he had been formally so designated.

My acquaintance with him is almost entirely limited to the years of our association at the University Hospital, but here on this field of actual work I can say that in Dr. J. E. Moore we have the highest development of surgical progress and he was in fact as his title read—a Chief in Surgery.

Parks Ritchie was the third president of the Academy. He lived sixty-seven years. He was born in the modest home of a minister of the gospel, brought up in an atmosphere of optimism and faith, surrounded by only the bare necessities of life and comfort made possible by the meager resources of his parents. But though lacking in physical accessories, these parents breathed into him, by example and conduct, the spirit of service. They were always giving, not of material things, but of their mentality, their interest, their help, not only to friends, but to all who were in need in their community.



Dr. Ritchie

The father was a minister whose whole text of life was faith, hope and charity, who, by his constant reiteration of the text by preachment and practice became a most beloved man, known far and wide as Father Ritchie. A man, mild spoken, of manner gentle, of thought kindly, retiring and modest, who, during all his eighty-seven years, viewed the events of this life through glasses of rose and left it with a profound belief that the promises of his Bible would be fulfilled.

The mother was a strong, vigorous woman of positive opinions, aggressive in her desires and intentions, active of motion, a doer of things, with a keen mind and intellect. She was for years a school teacher who believed that the rod was an efficient instrument of education. She was an active worker in the church, an original fundamentalist, rigorous in her belief and requiring all others to meet her half-way. A desire for knowledge carried over to her declining years, and her interests in reading and lectures kept with her to the end.

She was ambitious and it was she, I have no doubt, who named her first-born Elijah Parks, believing and hoping that he would also soar away to the great things of this life and the future. A rather stern manner and demeanor merely cloaked a fountain of humor, keen and nimble wit, a quality which beloved her to all who knew her. Aunt Hannah Ritchie was a forceful character.

Parks Ritchie had many of the qualities of his parents, not only in his personal life but in his contact with his patients. Whether he ever approximated the dreams of his mother and his name Elijah, I am sure that many will agree that he went far in that direction.

As a student he attended the Cincinnati College, where, after two terms of seven months each, he received his diploma. Such a foundation in the light of our present elaborate machinery was very meager.

After practicing in a small town in Indiana he moved for a short time to the plains of southern Kansas, a period which made a great impression upon him. The incidents of that experience were the source of many a story.

After coming to St. Paul in 1880 he associated himself with the late Dr. Alexander J. Stone. Through him and his acquaintance with others prominent in the city profession, he became a part of that group forming the St. Paul Medical College. I remember very well his excitement and enthusiasm over the prospect, and as a boy observed his preparation for his part in the work. I heard his opinion on the amalgamation of the colleges of these two cities to form the University of Minnesota Medical School. When the time came for election as Dean of that school, to follow Dr. Millard, it was with much thought and consideration and full appreciation of the responsibility of the position that he entered upon that work.

The years of his tenure brought many problems. One of these was the continual warfare between the clinical and laboratory branches for preferment in development. These were the days of the development of the laboratories and it was his appreciation of their great need that won his support in the hope that, when they were properly housed and the courses well manned, the clinical side would then be developed, and personal and gratuitous services in the field of clinical medicine and surgery would be dispensed with.

Another question that gave him great thought was the ever-increasing demand for a high standard of entrance. Remembering his own beginning, he had every sympathy with those who for various reasons were lacking. He had a wonderful manner of attention and suggestion and helpfulness in these matters. It is no uncommon happening for someone now practicing to tell me of how he helped them over some barrier. He got a great joy out of these incidents because often he expressed a fear that this continued elevation of requirement would keep from the profession many estimable men. "If it had not been for your father," is a frequent expression that I hear.

His lectures were always well attended, always interesting, not highly technical, but made valuable by much homely advice. They must have contained something because in the years since his death it is a frequent occurrence to have someone refer to them. His stories were always illustrative.

A number of years of association with Dr. Justus Ohage proved a happy time of his professional life. Two men of such diverse origin, training and attainments, they met on a common ground of cheerfulness, humor and optimism.

He often compared the act of parturition of the animal and the human in order to point out how horrible, how fearful a physiological process it is, devoid of all those things we conceive as beautiful, and in such the human is no better than the lower animal. But when we surround, as we do, the birth, with all the mother love, the pride of the father, the ceremony and joy, the pink ribbons and blue pins, then this process becomes the greatest event in life. Our own ability to appreciate, in its fullness, the beauty, the care and fostering of our young is that which elevates the human race above all others.

He was a general practitioner. He went into the home of the patient. He went when he was called, and he rendered service and gave advice, more than was necessary. He carried cheer and reassurance wherever he went. Often he did this by some quick response or side remark, some odd interpretation of a situation. One of the prominent bankers in St. Paul told me that one night he thought he had swallowed the wrong medicine. In terror he called my father, who responded immediately, heard his hurried story, carefully examined him, the bottle, the whole situation, solemnly and completely, and turned to the patient and said: "Well, Jim, if you had any moths inside of you, they are now all exterminated." The very abruptness, the absurdity of the remark brought quick relief and was better and more potent medicine than any other, because it was his quick intuition that here was a case of mental rather than physical distress.

His intuition, his quick wit, was a heritage from his mother, and it was through her that he carried in his bag other things than his medicine. How much he contributed to purely scientific progress is questionable; how much impression he made in the development of the medical school is unknown, but as an individual meeting other individuals, his influence was great, not only on his students, his friends and associates, but upon a host of people who sought his service. In this present time of more routine, standardized, impersonal study of disease and care of the patient, it is well to remember that many times that personal care and attention is invaluable. His kindly consideration, his unselfish services, his wit and humor carried him far, to many friends and to unusual respect in the profession.

Of heritage of material things, one must be always grateful, but that which transcends all others is the good name of one's father.

These four men contributed to the tradition of the Academy. Working in different fields they met here together. They all worked up to the day of their death, two of them cut down suddenly, two after a short time of retirement. They kept their interest to the last, they lived in the future. They kept their spirit and urge and love until no longer able to physically perform their duties. All were enthused with the sense of great service, all loved their work in its fullness, with a deep honesty of purpose. They were examples for others to emulate. They were models for us all to follow in our contribution to the tradition of the Academy, in the hope that we may also augment the progress of the great profession of medicine and earn the reward which we all agree they did earn, a reward greater than all others, the satisfaction of accomplishment, the love of one's family, the respect and esteem of one's fellows. They were worthy of their hire.

CASE REPORTS

Members are requested to report interesting and unusual cases for publication in this department. Many cases reported at hospital staff meetings and similar meetings are very instructive and worthy of publication.

A CASE OF BILATERAL NEPHROLITHIASIS*

OSCAR OWRE, M.D.
Minneapolis

L. F.—A man, aged 34 years, white. The patient entered the hospital December 11, 1923, complaining of attacks of pain in the lumbar region below the costal margin on both right and left sides. He stated that the pain radiated downward into the groin, the legs, and the scrotum. It was very severe and very sharp and lasted from an hour to several days. When severe attacks had subsided there was constant dull aching in the kidney region. The pain was more severe on the right than the left side. There was no hematuria with the attacks, although frequency and nocturia were present. There was no nausea or emesis.

The patient gave a history of similar attacks fifteen years ago, accompanied with severe hematuria. At that time he was treated by a doctor. The pain was relieved and the hematuria stopped. One year later he had another attack, which lasted only a short time. Since then he had been free from pain until the present illness, although frequently, urgency, and nocturia were present. The patient had had measles when a child, and influenza in 1918, but no operations or injuries. The family history was negative. He had been married fourteen years, had four children, living and well, and his wife had had no miscarriages or stillbirths.

He had become infected with gonorrhea the summer previous to entering the hospital, was treated for nine weeks and apparently cured. He denied syphilis.

The patient was a small man, very well developed and fairly well nourished. He had lost fifteen pounds during the last six months. Examination of the head, neck, chest, cardiac system, and gastro-intestinal tract was negative. There was no nausea or emesis, and the appetite was good. He had had many colds, but no cough, hemoptysis, or night sweats. There was no nervous or mental disturbance. The abdomen was tender and slight muscle spasm was noted over both recti. There were no masses palpable.

The genitalia were negative. Murphy percussion was positive on both sides. Bimanual palpation on the left side did not reveal kidney or spleen, but on the right side there was a suggestion of a large kidney. Owing to the fact that the patient could not relax his abdomen, this finding was not absolute.

Laboratory findings: The urine contained many pus cells on three occasions, and was persistently acid. The

Fig. 1. Roentgenogram showing bilateral nephrolithiasis.

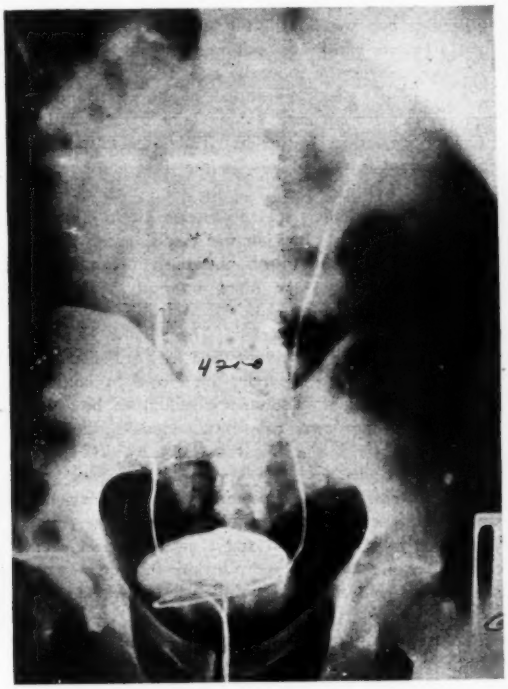


Fig. 2. Ureteral obstruction due to calculus at pelvis of kidney.

*From the Division of Genito-urinary Surgery, Minneapolis General Hospital.

blood findings were normal, Wassermann reaction was negative, and urethral smears were negative.

The roentgenological report was as follows: The right kidney was massive, extending from the eleventh dorsal vertebra down to the fifth lumbar. The left kidney was not well visualized, but appeared to be ptosed, so that it lay chiefly at the level of the third and fourth lumbar vertebræ. On the right side there were two large calculi and three smaller ones, all located in the lower portion of the kidney, probably corresponding to the pelvis. One large irregular calculus was noted in the pelvis on the left side. The bladder was thickened but contained no calculi.

Impressions: Nephrolithiasis—bilateral; hydronephrosis—right.

Cystoscopic examination: Cystoscopy was done in the usual manner. The bladder was evacuated of foul smelling, cloudy urine, and irrigated with several quarts of fluid, but owing to the extensive cystitis catheterization of the ureters was impossible. It was deemed advisable to irrigate the bladder daily for about one week. A cystoscopic examination was done a week later under caudal anesthesia. The urine was still cloudy and foul, with marked evidence of cystitis still present. The ureters were catheterized and cultures and specimens obtained. On the left a culture of bacillus coli was found, with many pus cells; on the right a culture of bacillus coli was present and the specimen was packed with pus cells. An intravenous injection of 1 c.c. of phenolsulphonephthalein was given and specimens collected from each kidney in a 2 c.c. solution of 10 per cent sodium hydroxide. The discoloration of the fluid occurred in two minutes on the right and seven minutes on the left.

January 3, pyelotomy and nephrotomy were done under gas-ether anesthesia. Incision was made on the right, beginning from the twelfth rib posteriorly to and opposite the superior spine of the ilium anteriorly. The tissues were separated, exposing Petit's triangle. The peritoneum was then exposed and reflected. The adipose kidney capsule was opened and the kidney exposed. Adhesions, which bound the upper pole securely, were freed by both sharp and blunt dissection. The stones could then be palpated in the pelvis and lower pole of the kidney. The kidney was then delivered and found to be markedly enlarged, the upper pole having a very soft consistency, suggesting a fluid content. Incision was made in the pelvis and a large, hard stone, about 2 cm. in diameter, was removed. The lower pole was incised and a smaller stone, about 1 cm. in diameter, was removed. A third incision was made, in the upper pole, and a seropurulent fluid drained. A soft catheter was inserted through the incision and into the ureter of the kidney and sutured in place. Closure was made in the pelvis and kidney tissue with fine catgut. The kidney was then replaced and a cigarette drain inserted into the peri-renal tissue. Closure was made with catgut, dermal, and three silkworm stay sutures.

The patient's postoperative recovery was uneventful. The drain was drawn out about an inch daily until removed. The drain into the kidney was removed on the fifth day. The wound looked fairly good and the sittches were removed on the tenth day. Closure was almost complete at that time.

February 20, 1924, the patient was again admitted to the hospital with severe attacks of renal colic on the left side. The pain radiated along the left groin and into the scrotum. Murphy percussion was positive. Frequency and urgency of urination were present with the attack. The right side was free from pain.

Fig. 3. Hydronephrosis with stone obstructing ureter.

Roentgenological examination showed enlargement of both kidneys, with one large stone in the pelvis of the left kidney. The right was free from stones.

A cystoscopic examination was made to determine the function of the kidneys. The bladder mucosa showed evidence of slight ulceration along the course of the left ureter and about the ureteral meatus. The spurts from the right ureter were rhythmic, while on the left they were delayed. The ureters were catheterized, the catheter meeting obstruction 22 cm. from the ureteral meatus. The right catheter passed directly into the pelvis. Specimens were obtained from both sides, the left being very cloudy, the right slightly cloudy. One cubic centimeter of phenolsulphonephthalein was injected intravenously and specimens were collected in 10 per cent sodium hydroxide. The dye appeared on the right side in three and one-half minutes, although it was not recovered on the left after forty minutes. Attempts to introduce sodium iodide into the left kidney pelvis were unsuccessful, the fluid passing back into the bladder. Pyelogram showed the catheter in contact with stone.

March 1, 1924, nephrectomy was done. Incision was made extending from the twelfth rib posteriorly on the left, to and opposite the superior spine of the ilium ante-

riorly. The muscle and fascia were severed, the fatty capsule exposed and opened into. The ilio-inguinal and ilio-hypogastric nerves were freed and the kidney delivered. The ureter was exposed, clamped, tied, and severed. The blood vessels were clamped and tied and the kidney was removed. Closure was made with three silkworm sutures, the muscles and fascia were approximated with catgut, and the skin with dermal. A large Penrose drain was inserted into the upper angle of the wound.

The postoperative care was similar to that described in the previous operation. Recovery was uneventful and the patient was discharged in twenty days.

Laboratory report: After the operation the urine contained few pus cells. Function: Total 28 per cent with intramuscular phenolsulphonephthalein. Bacillus coli were present prior to nephrectomy but were absent on several examinations after the operation. Blood chemistry was normal before and after both operations.

April 4, 1924, the patient again came to the hospital. He had felt well for thirteen days after his discharge from the hospital. April 7 he developed severe pain in the right lumbar region, which radiated into the right lower quadrant. With the onset of the pain, emesis resulted. The patient was unable to retain either solid foods or liquids. Previous to this attack he had not vomited in the past twenty years.

Roentgenological examination was negative.

Laboratory report: April 4, the urine contained many pus cells. Leucocyte count was 12,800, polymorphonuclears 89 per cent. Blood chemistry: Creatinin 2.3 mg., urea 42.6 mg., glucose 116. Ten days later the urea dropped to 23.3 mg.

Treatment: Proctoclysis, liquid diet, forced elimination, and hexamethylenamin. together with sodium acid phosphate.

The patient left the hospital April 14, apparently much improved, with normal blood chemistry and urine negative.

In conclusion, we wish to state that in cases of double nephrolithiasis we operate on the best kidney first and get it in the best possible condition before directing our attention to the other. In this case, we intended to remove the large pyonephrotic kidney, but it was necessary to put the other in a safe condition and free from calculus.

The patient was seen two weeks ago and is in excellent health, being able to work eight to ten hours daily in his tailor shop.

ZINC STEARATE POISONING

The effects produced by the aspiration of zinc stearate consist in the production of an acute disturbance of the bronchi and lungs. The cases that have been reported can be divided into several types: (1) The fulminating variety composes one group, in which the onset is sudden and stormy, with rapid respiration and cyanosis. (2) In another group acute bronchial pneumonia develops. (3) In the third group of cases the course of the illness is brief. It has been shown experimentally that the inhalation of zinc stearate produces interstitial pneumonia and peribronchitis. Manufacturers should be prohibited from selling the powder in its present form: a self-closing container should be insisted on.

(Jour. A. M. A., Sept. 12, 1925, p. 844.)

PROGRESS

Abstracts to be submitted to Section Supervisors.

Members are urged to abstract valuable articles which they run across in their reading and send the abstracts to the physicians in charge of the respective sections. In order to avoid duplication it would be well to communicate with one of the section supervisors before the article is abstracted.

SURGERY

SUPERVISORS:
DONALD K. BACON,
LOWRY BLDG., ST. PAUL
VERNE C. HUNT,
MAYO CLINIC, ROCHESTER

THE ORAL ADMINISTRATION OF SODIUM TETRAIODOPHENOLPHTHALEIN FOR CHOLECYSTOGRAPHY: Whitaker, L. R., Millikin, G., and Vogt, E. C. (Surg., Gynec. and Obst., 1925, Vol. XI, pp. 847-851). It is claimed that sodium tetraiodophenolphthalein administered orally will produce satisfactory cholecystograms. The drug is administered in five grain salol-coated pills, enough to amount to a dose of 0.08 gram per kilogram of body weight. The pills are started in the evening following a light supper and are taken at 15-minute intervals with half glass of water. Roentgenograms are made 12 and 15 hours after taking the pills. After the 15-hour plate a meal is taken, and one hour later another roentgenogram is made. The purpose of this is to see if the gall-bladder shrinks during digestion.

Of 44 persons thus tested, 27 had no symptoms, 5 vomited, 5 had mild diarrhea, 7 had slight nausea. Cholecystograms were produced in 93 per cent of normal subjects.

This method relieves patients of the hospitalization necessary for the intravenous method, causes very little inconvenience and few unpleasant symptoms.

A normal clearly outlined shadow which diminishes rapidly in size during digestion is taken to indicate little or no gall-bladder disease. An imperfect or total absence of shadow may be due to imperfect technique or gall-bladder disease. An intravenous injection of the drug will confirm the findings.

J. K. Holloway, M.D.

ACUTE INFECTIONS (special reference to pelvic infections): Infection is a disease in which there is a battle between the body and invading bacteria. Inflammation is an ally of the body. In pelvic infections no specific therapy of much importance has been found. Serum therapy even in puerperal infection is of little value.

The use of proteids, intravenous antiseptics, et cetera, is largely in the experimental stage. Their usefulness is undetermined, except that intravenous antiseptics such as mercurochrome seem of definite value in some cases of staphylococcus and colon bacillus infections. Supportive

treatment, as in tuberculosis, is important in infections. Outdoor treatment is of especial value. Surgery should be conservative. The treatment of puerperal infection has become almost non-surgical, and rightly so. The operation of incision and drainage of pelvic veins in acute puerperal phlebitis has died a well deserved natural death. In puerperal pelvic exudates there is often little or no suppuration. When abscesses are present they are usually multiple and often inaccessible. Such exudate nearly always disappears entirely by spontaneous absorption. Non-puerperal infections of the fallopian tubes has also become largely non-surgical. There is little need for surgery for acute infections of the tubes. Fifty per cent of all patients with infection of the fallopian tubes, if given good medical care and sufficient time, will recover without operation. Recovery does not mean complete restoration of function of the tubes; neither is function of such tubes restored by surgery. In pelvic abscess, unless it is large and superficial, it is better to postpone surgery until immunity is established.

The treatment of acute infections should be chiefly medical with few exceptions, as surgery is essentially concerned with tissue pathology and in these cases the condition of the tissues is of secondary importance.

J. K. Holloway, M.D.

PEDIATRICS

SUPERVISORS:
CHESTER A. STEWART,
LA SALLE BLDG., MINNEAPOLIS
ROY N. ANDREWS,
MANKATO CLINIC, MANKATO

ACRODYNIA: F. C. Rodda, M.D. (Amer. Jour. of Diseases of Children, August, 1925). The etiology of acrodynia is not yet clear. Whatever the cause may be, it surely is not due to a deficiency in diet. There is much proof, clinically, that acrodynia is the result of a chronic intoxication from upper respiratory infections. There appeared to be no sex distinction.

In 60 per cent of the cases, there was a definite time from the infection to the onset of the hyperirritability, that is, an incubation period of from one to two months. The duration of symptoms averaged from one to three months. In one case, it was six months and in another two years.

The first four symptoms—hyperirritability, hyperhidrosis, rubbing of hands and feet, the erythema and peculiar changes in the skin of hands and feet—were found in all cases. These symptoms are pathognomonic. Desquamation and generalized miliaria were found almost as frequently. Sleeplessness, anorexia, loss of weight and weakness, results to be anticipated from the preceding symptoms, were present in nearly all the cases. The neurologic findings, paresthesia and diminished reflexes, occurred in over half the cases. Alopecia occurred in nine, photophobia in eight and loss of teeth in three cases. The author has never seen the condition in a child whose tonsils and adenoids had been removed.

In a few of the early patients, eventually the tonsils and adenoids were removed, not anticipating any effect on the disease, but simply to relieve the child of the handicap of a persisting upper respiratory infection. To the author's surprise the patients promptly recovered. There was speedy relief from perspiration, a return of appetite and sleep, a gain in weight, and lastly the disappearance of the peculiar skin findings. Since making these observations, the tonsils and adenoids have been removed as soon as a diagnosis was made. In this series, early recognition of the disorder and prompt removal of tonsils and adenoids has been followed by speedy recovery. in all patients.

R. N. Andrews, M.D.

FUNCTIONAL HEART DISEASE IN CHILDREN: Mansfield G. Levy, M.D. (Arch. Ped., September, 1925). A functional heart murmur is one whose anatomical cause the author does not know. Although at the present time most textbooks still adhere to the term "functional murmur," the author prefers to discard it, and substitute "atonic," "hemic," "cardio-pulmonary," or "accidental," depending upon whatever he believes to be the underlying cause.

The majority of these so-called functional murmurs are cardio-pulmonary in origin. This murmur originates outside the heart; hence, change in the posture of the child, by altering the relation of the heart to the surrounding viscera, may alter the character of the murmur, or even cause its complete disappearance.

Schlieps uses the term "atonic" for the murmur heard over the hearts of asthenic children. This murmur is usually heard over the apex, differing in this respect from the cardio-pulmonary murmur heard over the base. The atonic murmur is supposed to be due to a relative insufficiency of the mitral valve following a loss of tone of the heart muscle.

The conditions most generally spoken of as functional, and which many times have been found to be organic, are: sinus arrhythmia, certain cases of heart block, including some forms of bradycardia, and the systolic murmurs, heard over the base in the pulmonic area. Not all the arrhythmias or irregularities of the heart, as heard by the stethoscope or felt at the pulse, are simple sinus arrhythmias.

There are organic irregularities that may be explained by the presence of a myocarditis or a pericarditis. The electro-cardiogram is indispensable for accurate diagnosis of these abnormalities.

Occasionally, we meet with cases in which an abnormally slow heart action attracts attention. This may be due to an infection associated with rheumatism, diphtheria, influenza, or other infection. In most of these cases we recognize the slowing as a symptom of some definite affection, and are not likely to refer it to any disease of the heart. When a persistent slowing of the heart is observed in early life, with or without obvious cause, then suspicion must be aroused of the existence of true heart disease.

Recently, Levine of Boston reported a series of blocks, where the ventricular rate was between 50 and 60. How

is one to recognize a blocking of this kind if not looked for by an electro-cardiograph tracing? One might call these cases simple bradycardias, looking for the explanation of their existence outside the heart. Simple systolic murmurs, heard most commonly over the pulmonic area, may or may not be functional.

The author states that the purpose of his paper is to awaken a spirit of thorough investigation of each and every case that comes to us with heart murmurs. Not only will we obtain accuracy in our diagnoses, but such investigation will show how much more uncommon functional conditions are than has been previously acknowledged.

R. N. Andrews, M.D.

GYNECOLOGY AND OBSTETRICS

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GYNEPLASTIC REPAIRS FOLLOWING CHILDBIRTH: Bubis (Am. Jour. Obst. & Gynec., Vol. X, No. 2). The author presents his experience with a method of making gynecological repairs following delivery or early in the puerperium. His experience demonstrates that repair of old as well as recent lacerations of the cervix, with cystocele; lacerations of the outlet, with rectocele; and hemorrhoids, can safely be repaired at the end of labor or within the first week of the puerperium. In 1922, 169 such cases were operated upon, of which 156 were done immediately, and 13 at intervals during the first week. Most multiparæ present one or more of these lesions and there are many advantages in this course of procedure. It is difficult to get them to return for elective operation. By this procedure they are assured of relief of all symptoms and the stay in the hospital is not greatly prolonged; 37 were discharged in 14 days, 39 in 15 days, 36 in 16 days, and only 8 were kept in the hospital more than 20 days.

The contra-indications are: a known or suspected infection, extreme weakness, post-delivery shock or hemorrhage, phlebitis, varicosities, or the presence of respiratory disease which prohibits a prolonged anesthesia. Contrary to previous teaching, the tissues seem to heal satisfactorily and are not affected by the presence of the lochia.

Types of operations: Trachelorrhapy, 29; trachelorrhaphy and perineorrhaphy, 71; trachelorrhaphy and cystocele, 1; trachelorrhaphy, cystocele and perineorrhaphy, 7; perineorrhaphy, 43; perineorrhaphy cystocele, 10; hemorrhoidectomy, 3; cystocele, perineorrhaphy, perineorrhaphy and hemorrhoidectomy, 1; trachelorrhaphy, perineorrhaphy and hemorrhoidectomy, 4.

The technic of the conduct of labor and of the subsequent operative procedure is discussed in considerable detail and is worthy of careful study.

The complications met with in this series were not different nor in excess of experience with similar elective procedures.

A. L. McDonald, M.D.

ROENTGENOLOGY

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FRACTURE OF THE FABELLA: Reimer (Fort. a. d. Gebiete d. Röntgen., V. 33, p. 558, June, 1925). The fabella is a periarticular sesamoid lying in the popliteal space in the gastrocnemius. It is constantly present in negroes and certain mammals. It is present in about 15 per cent of white people and is usually bilateral. Rarely it is double on one side.

The author reports a case in which from indirect injury the fabella was fractured. There was a separation of the lateral head of the gastrocnemius confirming the diagnosis. The appearance of the fractured fabella was very similar to the usual appearance of fractures of the patella. There were three fragments. No ill results were noted later after the separation of the gastrocneumius had been repaired.

Leo G. Rigler, M.D.

A CLINICAL STUDY OF SOME COMMON ANATOMICAL ABNORMALITIES OF THE COLON. II. THE LOW CECUM: Kantor (Am. Jour. Roent., Vol. 14, p. 207, Sept., 1925). The cecum may be abnormally low and fixed or abnormally mobile (cecum mobile). These are congenital anomalies occurring in 18 per cent of all patients.

This condition occurs most frequently in persons of the asthenic habitus and is more common in women than in men.

Patients with a low or abnormally movable cecum may present definite reflex symptoms, the most notable of which are headaches and vomiting. Fifty-nine per cent vomit and 48 per cent have headaches. The nature of the association between the position of the cecum and these symptoms has not yet been determined. The author emphasized the colon as a factor in vomiting.

Appendectomy is very frequently performed in these cases and is rarely of benefit. Appropriate medical treatment may give relief or cure in the majority of cases.

The low or mobile cecum can be diagnosed only by roentgen examination and is an important finding in the examination of the gastro-intestinal tract.

Leo G. Rigler, M.D.

BOOKS RECEIVED FOR REVIEW

LECTURE CLINIC AND DISCUSSIONS ON ELECTROPHYSIOTHERAPY. 736 pages. Illus. Chicago: H. G. Fischer Company, 1925.

DEVELOPMENT OF OUR KNOWLEDGE OF TUBERCULOSIS. Lawrence F. Flick, M.D., LL.D., Philadelphia. 783 pages. Cloth, $7.50. Wickersham Printing Company, Lancaster, Pa., 1925.

AN INTRODUCTION TO OBJECTIVE PSYCHO-PATHOLOGY. G. B. Hamilton, M.D. 354 pages. Cloth, $5.00. St. Louis: C. V. Mosby Co., 1925.

INTERNATIONAL MEDICAL ANNUAL. 43rd year, 1925. 548 pages. Illus. Cloth, $6.00. New York: Wm. Wood & Co., 1925.

MODERN MEDICINE. Its Theory and Practice. Edited by Sir Wm. Osler, Bart., M.D., F.R.S. Re-edited by Thomas McCrae, M.D. 3rd edition. Vol. I. 845 pages. Illus. Cloth, $9.00. Philadelphia & London: Lea & Febiger, 1925.

OUTLINES OF PATHOLOGY. E. T. Bell, Prof. of Pathology, University of Minnesota; William A. Riley, Prof. of Entomology and Economic Zoology; B. J. Clawson, Asst. Prof. of Pathology; J. C. McKinley, Asst. Prof. of Neuropathology; William A. O'Brien, Instructor in Pathology; John F. Noble, Instructor in Pathology. Edited by E. T. Bell. 586 pages. Minneapolis: University of Minnesota Press, 1924.

This book, edited by Dr. E. T. Bell, Professor of Pathology at the University of Minnesota, is one which represents the lectures given in the courses of Pathology at that school, and is a book which every practitioner ought to have in his library. Besides Dr. Bell's contributions, other men in the department have written on their own special field of work, such as the chapters on Neuropathology, Hematology, and Parasitology.

The book is entirely devoid of any illustrations, but, inasmuch as it is not intended to be an illustrated textbook, it is a mighty useful book for the purpose of collateral reading or for the purpose of obtaining a hurried review of any phase of Pathology that may be wanted.

The chapters on the Heart and Kidneys are especially well written and very interesting; the classification of the various diseases, while not exactly the same as is used in other textbooks, is by far the most practical and, seemingly, the most scientific. Especially is this so in the chapter on diseases of the Kidney written by Dr. Bell, whose classification of diseases of the Kidney is by far the best classification of any yet made.

This book ought to occupy a place in every physician's library, because of the fact that it is a compact study, well written, of perhaps one of the most important sciences in medicine. M. W. ALBERTS, M.D.

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WANTED—Experienced medical salesman to sell electromedical apparatus in Minnesota and Wisconsin on a commission basis. State qualifications and experience. Address C-59, care MINNESOTA MEDICINE.

WANTED—A young Norwegian physician and surgeon who has had good surgical training, for a Scandinavian community where there is a good hospital. Opportunity excellent for the right man. Unmarried man preferred. Address C-60, care MINNESOTA MEDICINE.

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